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Vol. XIV, No. 7 JULY, 1925

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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Headquarters—Fort Des Moines Hotel.

The 1925 Meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Des Moines, same time and place.

For Association Roster, see pages x, xii and xiv.

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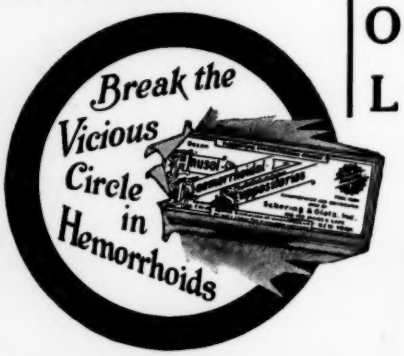

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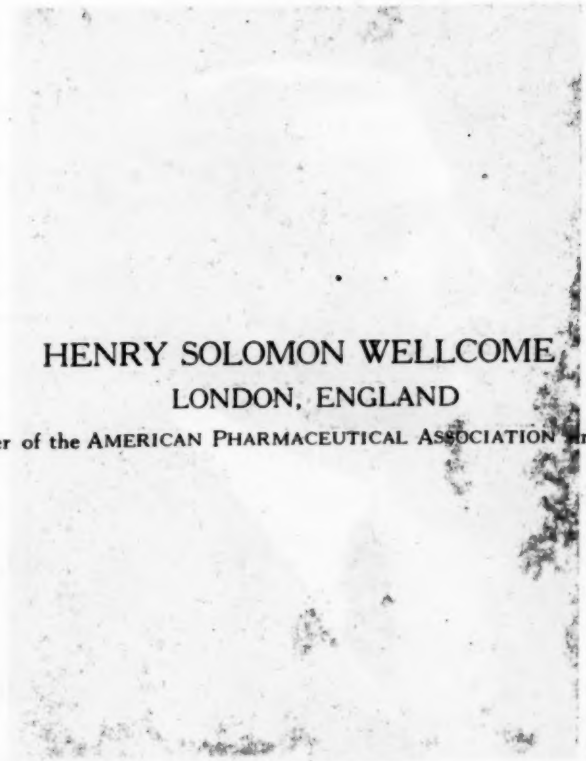
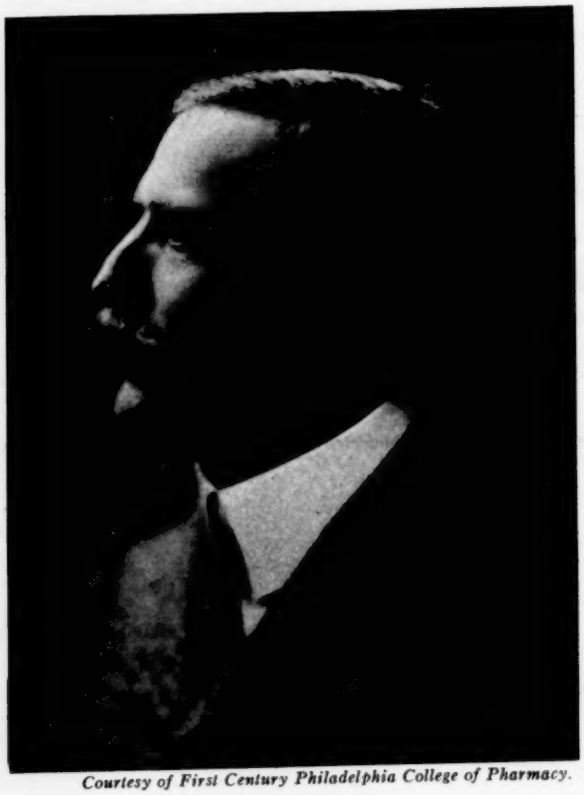


HENRY SOLOMON WELLCOME

LONDON, ENGLAND

Member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1875



Courtesy of First Century Philadelphia College of Pharmacy.

HENRY S. WELLCOME.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XIV JULY, 1925 No. 7

HENRY SOLOMON WELLCOME.*

Henry S. Wellcome, for fifty years a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, is a native of Wisconsin. When about five years of age his parents moved to Garden City, Minn., where he received his early education. While still very young, a highly cultivated English chemist came to Garden City to manage a local pharmacy, and from him Wellcome received practical training in chemistry and pharmacy, and, later, was appointed assistant pharmacist. At the age of 17 years he was placed in charge of the dispensing department of Poole & Geysinger's Pharmacy, Rochester, Minn. After several years' experience here he went to Chicago and engaged with the late Thomas Whitfield, and during one year of this period attended the Chicago College of Pharmacy. Then he came East and continued his studies at the Philadelphia College of Pharmacy, from which institution he graduated in 1874; Dr. F. B. Power[1] was a member of the same class.

After graduation Mr. Wellcome accepted a position with Caswell Hazard & Company, of New York. After two years of service with the latter firm he engaged with McKesson & Robbins, by whom he was sent on special missions to various parts of the United States, Canada, Mexico, Central and South America. While in South America he studied the native cinchona forests, and presented a most interesting paper thereon to the AMERICAN PHARMACEUTICAL ASSOCIATION, which is printed in Volume 27 of the PROCEEDINGS, pp. 814 to 830.

The English chemist, under whose guidance Mr. Wellcome studied in Garden City, had loaned him various English scientific publications, and had given him information relative to British libraries, museums, and educational institutions, and impressed him with the importance of London as a financial center. He discussed the advisability of engaging in chemical and pharmaceutical manufacturing in England with his friend S. M. Burroughs;[2] as a result, in 1880, a partnership was

* Most of the data for this sketch have been taken from the "First Century of the Philadelphia College of Pharmacy."

[1] See Volume XI, JOUR. A. PH. A., p. 403.

[2] JOUR. A. PH. A., September, 1921, p. 653.

established under the firm name of Burroughs, Wellcome & Company, and these comparatively small beginnings have grown into the present large establishment.

From very early days Mr. Wellcome has been interested in the science of his profession, and he has contributed largely, not only to researches in pharmacy, but also in history and archaeology. He founded the Physiological Research Laboratories in London in 1894, and during the World War extensive research in this institution led to the development of various sera and vaccines which proved of great importance and assistance to the Allies.

The Chemical and Research Laboratories of the firm were founded by Mr. Wellcome in 1896; Dr. Frederick B. Power was the director for more than 18 years. The researches in these laboratories have been varied in character, comprising problems in both pure and applied chemistry, and the synthetic production of various substances. Later, Mr. Wellcome founded the Bureau of Scientific Research, and the auxiliary Entomological Laboratory, which is largely concerned with tropical medicine and hygiene. The Museum of Tropical Medicine and Hygiene was founded in 1913, and during the same year the Wellcome Historical Museum, well known to pharmacists and other scientists of the world, was opened. Mr. Wellcome is continually collecting for this museum, which is affiliated with various research institutions. He also established a fully equipped and floating tropical research laboratory on the Upper Nile in 1902. At a meeting in London, February 1922, of the governing board of the Gordon College, Khartoum, with which these laboratories are affiliated, the chairman, General Sir Reginald Wingate, stated—"We must readily acknowledge the immense benefits conferred on the country by the institution of the Wellcome Tropical Research Laboratories. Their generous founder is still with us, constant in his endeavor to maintain tropical research and all it entails at its present high standard of efficiency." These foundations are of great importance but they do not comprise all of the founder's successful enterprises.

As already stated, the childhood of Mr. Wellcome was spent in a frontier settlement of Minnesota, and here his interest had its inception in archaeological subjects, and this has continued to develop and find expression in some of Mr. Wellcome's larger undertakings, which are well known to archaeologists and others. During one of his expeditions to the Soudan, after Kitchener's reconquests, he discovered several prehistoric Ethiopian archaeological sites in the Upper Nile region; the excavations here have since been carried out under his personal direction, and the researches have been fruitful of results. The extent of this work is shown by the employment of a technical and administrative staff of 25 Europeans and more than 3000 native workmen. Prof. G. A. Reisner, of Harvard University, writing of this work said—"The excavations carried on by H. S. Wellcome have thrown unexpected light on early Ethiopian history in this region. For the first time a scientific archaeological record has been made of a site in the interior of Africa."

Mr. Wellcome's interest in pharmacy continues, not only in Great Britain but also in the United States, and his encouragement of these promotions of pharmacy, including those of the AMERICAN PHARMACEUTICAL ASSOCIATION, has been evidenced by words and deeds. Because our honored member has passed the half century mark of ASSOCIATION affiliation, congratulations are extended to him, complemented by wishes for good health and continued activity during many more years.

E. G. E.

EDITORIAL

E. G. EBERLE, EDITOR 253 Bourse Bldg., PHILADELPHIA

THE CORRELATION OF PHARMACEUTICAL AND MEDICAL EDUCATION.

BY H. H. RUSBY.

VARIOUS attempts have been made during recent years to improve the relations between pharmacists and physicians, the initiative usually proceeding from the former. That these attempts have met with comparatively little success is probably due to their having been made in the face of natural obstacles, in the want of harmony between the interests of the two professions. The lines of development in pharmacy, followed in the interest of the pharmacist, have not been equally conducive in meeting the requirements and ideals of medical service. Of late, this gap has widened rapidly, the preparation of the pharmacist having failed to keep pace with the changes in medical practice.

The result of this condition is that many medical men have been compelled to engage largely in work that is distinctly pharmacal in its nature. Throughout the laboratories of the country, both commercial and educational, we find medical men engaged in work which should be performed by pharmacists. It appears worth while to inaugurate a new attempt, beginning at the bottom, and coördinating the training of the pharmacist with the nature of the service required of him. While it is undoubtedly a mistake to regard the pharmacy school as a department or branch of the medical school, it is equally true that there should be a much closer coördination between them than now exists.

It may be accepted without discussion that pharmacal assistance is necessary to the success of medical practice and development, and that the more definitely the two professions can differentiate their fields of labor, and the more closely and harmoniously they can coördinate their work, the more successful the results will be.

It may also be accepted without discussion, that as a result of the great development of medical science and practice, a higher grade of service is demanded from the pharmacist than formerly and that new lines of study and training must be pursued in order to fit him therefor. As a general statement, it can be said that the physician deals with patients, the pharmacist with materials, the two lines of activity necessitating a wide difference in the kinds of training provided. While the physician knows his materials well enough to be able to state his exact requirements, it would represent a duplication of effort and a waste of time for him to prepare the materials that he needs. The most perfect and satisfactory pharmacal assistance should be available for such service, a statement that applies equally to research operations and professional practice. A physician may desire, and properly so, to concern himself with the preparation or the investigation of the materials to be employed in his art, but it should be recognized that in doing so, he is performing pharmacal work, and he should be freed from all necessity of doing so. Many of our most active and successful investigators along pharmaceutical

lines, at the present time, are graduates in medicine, and not in pharmacy, a reversal of the proper status.

Material examinations by the pharmacist need not be confined to articles of the materia medica. To pharmacists possessing the appropriate education and training, and equipped, as they must be, with the necessary accommodations and apparatus, may well be referred the examination of pathological products. If physicians have been unwilling to entrust such work to pharmacists, it is chiefly because they have had no satisfactory assurance that the latter were competent to the extent of being trustworthy. Through the medium of an association in which the competence of pharmacists to perform certain kinds of work should be passed upon by medical authority, an arrangement contemplated in the association here proposed, this objection would necessarily disappear. The average physician would then welcome relief from lines of work pertaining to laboratory equipment and facilities that he does not possess, and that are not suitable to the physician's office.

Every practicing physician should have at his command the most perfect service in prescription work, using the term in its broadest sense, and every research medical worker should be able to turn to some pharmacal worker for assistance in developing new materials for special investigation. Such assistance is to be found in the laboratories of manufacturing pharmacists, and training schools are necessary for the recruiting of these ranks. Such trained investigators are not restricted to these laboratories. Many are engaged in independent research. We are informed that 240 of them are listed as now engaged in pharmaceutical research in this country. It is evident that competent institutions must exist for the training of such workers. The same is true of the corps of more than a thousand teachers in the pharmacy schools of this country.

It seems obvious that training for this higher grade of pharmacal service should be different, from the beginning, from that of the pharmacist who has in mind merely a preparation for the ordinary work of the pharmacy. Admitting the desirability of having all pharmacists educated in this ideal manner, the hard fact is realized that most of them will never do so, and that some provision should be made for the special training of a limited class.

For the purpose of accomplishing this work, the best arrangement would appear to be the establishment of graduate schools of pharmacy, in close connection with our first-class medical schools. Such schools might have a separate existence or be departments of the medical school, but in all cases, the conditions of admission should be acceptable to the medical school, which should also have a strong influence in the formation of a curriculum adapted to the needs of the medical profession, and a voice in deciding upon the fitness of candidates for the appropriate degree. In other words, since it would be the function of such a school to supply specially trained assistance in medical work, medicine should, to a great extent, determine the character of the work of the school.

The subjects of a pharmaceutical nature to which attention should be specially directed in a graduate syllabus are the chemical and microscopical examination of foods, drugs, medicines, poisons and pathological products; the biological testing of drugs and medicines; the manufacture of biological medicinal agents; advanced botany; synthetic chemistry; chemical microscopy and special pharmaceutical manufacturing.

Were a sufficient number of men, properly qualified for such work, and their qualifications determined by competent medical authority, to be supplied, it can scarcely be doubted that their services would be freely utilized in medical assistance work. A coördination thus established would be in accordance with natural conditions.

The present tendency of medical schools to function as sanitary centers, rather than as mere curative institutions, appears to absolutely demand some such arrangement as is here proposed. Associating themselves, as they are doing, with veterinary and dental schools, and training schools for nurses, it would appear to be quite an anomalous situation for the pharmacy schools to remain isolated.

THE DES MOINES MEETING AND THE AMERICAN PHARMACY HEADQUARTERS.

PRIOR to the convention of the AMERICAN PHARMACEUTICAL ASSOCIATION in Des Moines, a Plant Science Laboratory Seminar will be held at the University of Minnesota. The success of the Pharmaceutical Laboratory Conference at Buffalo last year prompts us to say that another conference will be arranged for. A program of the former, and a partial one of the meetings of the American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, are printed in this issue, and that of the AMERICAN PHARMACEUTICAL ASSOCIATION under "Association Business."

A partial program of a session of the Association to be given over to the American Pharmacy Headquarters appears under "Societies and Colleges." The Headquarters will be publicity of a high order for pharmacy, because it expresses faith in the mission of pharmacy; it will be the outpost of pharmacy and afford the means for combating destructive tendencies, conserving and preventing duplication of effort, and make possible a coördinating force and clearing house for industrial, business and professional problems; it will mean a new note of pharmaceutical progress, because behind all of this stands the coördinated association of the drug business and of pharmacy.

How quickly new opportunities will come with the establishment of the Headquarters is evidenced by the message from the Board of Trustees of the United States Pharmacopœia, p. 467, June JOURNAL, A. PH. A. This brings into service three of the activities which have been mentioned in connection with the Headquarters—the Laboratories, the Museum, and the Library. Concerted effort should bring the subscriptions to conclusion before the Des Moines convention, so that the discussion there can be centered on pharmacy's greater activities. Most states have contributed; the few that have not are invited to do so. E. G. E.

LET US ASSUME OUR RESPONSIBILITIES.

NEVER before have messages come from so many sources admonishing the industries to assume responsibilities. There is no difficulty in determining why there has been a desire to delegate responsibilities—largely because the central government assumed direction and in a great many instances held different opinions

and, at various stages, not always consistently. The departments of the Government now realize that the progress and prosperity of the country depend on coöperation with the activities contributing thereto.

The divisions of trades and professions were influenced by government action, and with the changing attitude of the governmental departments there is coming a more general correlation, coördination and coöperation of the latter with the former, and also among those engaged in trades, manufactures, arts and sciences; this prompts the publishing of a number of prelects and the foregoing editorial in this issue of the JOURNAL. We may not discern how a leading thought that controls business shapes professional activities, but there is a permeating influence. The quotations from the addresses of President Coolidge and Chief Justice Taft serve for the title of this comment and the articles referred to as a pandect.

E. G. E.

RESOLUTION ON MANUFACTURE AND SALE OF ALLEGED ALCOHOLIC MEDICINAL PREPARATIONS.

A RESOLUTION on "Manufacture and Sale of Alleged Alcoholic Medicinal Preparations" was presented to the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION and adopted. The motion, which is printed under "Association Business" in this issue, instructs that proper publicity be given in the JOURNAL OF THE ASSOCIATION. The action is timely because there are a number of preparations on the market, the sales of which discredit the sellers and are condemned by pharmacists. Two paragraphs from the code of ethics* of the AMERICAN PHARMACEUTICAL ASSOCIATION follow:

> "Pharmacy has for its primary object the service which it can render to the public in safeguarding the handling, sale, compounding and dispensing of medicinal substances."
>
> "The Pharmacist, being legally entrusted with the dispensing and sale of narcotic drugs and alcoholic liquors, should merit this responsibility by upholding and conforming to the laws and regulations governing the distribution of these substances."

The resolution referred to reads:

"Pharmacy has for its primary object the preparation of medicines for the sick. In addition to this responsibility the members of the profession have been entrusted with the dispensing and use of alcoholic liquids for medicinal purposes.

"The pharmacist who connives at, or actually takes part in the compounding, marketing, or sale of preparations which, while masquerading under the guise of medicines, and possible complying with the letter of the regulations governing these products, have for their principal purpose the evasion of the Eighteenth Amendment, is an unworthy member of our honored calling.

"Pharmaceutical organizations should purge their membership lists of such individuals as speedily as possible, in order that the public whom the profession serves may realize that such individuals are not representative of pharmacy.

"Our aims and ideals are constructive, and we deprecate the false position in which pharmacy is placed by the despicable actions of the few who infest our calling with purely selfish aims which are destructive to the best interests of society at large."

---

* See p. 728, September JOUR. A. PH. A., 1922.

SCIENTIFIC SECTION

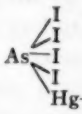
THE ARSENICAL SOLUTIONS.

No. 3. *Liquor Arseni et Hydrargyri Iodide* (*Donovan's Solution*).

(*Continued from p. 511, June issue.*)

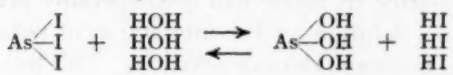
BY H. A. LANGENHAN.

A possible structural conception of a double salt of the two iodides that are supposed to be united in Donovan's Solution to a single molecule can readily be gained from the assumed formula which conceives the double salt as an arsonium iodide mercuro iodide.



In this connection it is noteworthy that, unlike the colorless double salt of lead iodide—ammonium chloride, which is formed with the aid of a little water and is decomposed again into its components with more water, this compound appears more stable for it remains seemingly unchanged no matter what the dilution. Moreover, in attempting to concentrate the solution, the compound distils over with the water vapor, seemingly unchanged, a phenomenon already observed by Donovan. Even sodium bicarbonate does not precipitate the HgI_2, hence the assay of the arsenic as in Fowler's solution, by means of iodine, which is explained on the basis of the change of trivalent arsenic to pentavalent arsenic, may be regarded as contradicting the formula assumed.

Moreover, our general knowledge of the halides of the nitrogen subgroup of group five of the periodic system seems to contradict the assumption that Donovan's solution is that of a double halide, such as those of Bonsdorff, and the so-called *iodohydrargyrate of arsenic* by Donovan. The readiness with which arsenic trichloride is acted on by water with the formation of arsenous acid and hydrogen chloride has already been pointed out under Liquor Acidi Arsenosi. Because of the slow, rather than sparing, solubility of arsenic tri-iodide—the U. S. P. states that AsI_3 is soluble in twelve parts of water, but it requires time to effect solution at room temperature—this process naturally requires much more time. Yet with so large a ratio of water to arsenic tri-iodide as prevails in the finished product, the hydrolysis, indicated by the following formulas, may be regarded well nigh complete, though the reversibility of the reaction should not be lost sight of.



Hence, though the possibility of a separation of a double iodide of arsenic and mercury is by no means excluded under proper conditions, Donovan's Solution by no means seems to afford them. The fact is that it requires about the same amount of water to bring the arsenic tri-iodide into solution whether mercury di-iodide is present or not. The solution of mercury di-iodide under the conditions prevailing in Donovan's Solution readily explained by the presence of hydrogen iodide resulting as one of the products of hydrolysis of the arsenic tri-iodide. As is well known,

mercury di-iodide is readily soluble in aqueous solutions of iodides with the loss of the red color.[1] Hence interpreted in the light of our general knowledge of the chemicals involved, it would seem much more rational to assume that Donovan's Solution consists essentially of an aqueous solution of arsenous acid and a compound of mercury di-iodide with hydrogen iodide, and that other substances, such as a double halide, arsenic tri-iodide, arsenic hydroxyiodide, etc., are present in minor phases, if at all in recognizable quantities. That, with the change of conditions, such as ratio of solvent to solute, etc., these minor phases may become major phases and may be separated should not be overlooked.

It must become apparent from the above considerations that the chemistry of Donovan's Solution is by no means as simple as is assumed by the textbooks.[2] It would seem that a better understanding might be attainable if something were known about the interaction of arsenic tri-iodide and mercury di-iodide in solvents other than water. For this purpose a small number of solvents were chosen. Alcohol was selected because, like water, it has a hydroxy group and might be expected to yield hydrogen iodide as one of the products of interaction. Ethyl acetate was chosen because it was devoid of hydroxy hydrogen. Methyl salicylate was selected, not only because it is an ester with a much higher boiling point than the other substances, but also because it contains a hydroxy or more particularly a phenol hydrogen. Chloroform, in turn, was selected because it is devoid of oxygen in any form and because of the possibility of interaction, though scarcely to be expected, between the chlorine of the solvent and the iodine of the solutes. Finally acetone was added to the list because the chemistry of this solvent has received considerable attention in recent years. Hydrocarbons were excluded because an earlier preliminary experiment with heptane had shown that little, if any, reaction takes place.

The study of the action of these solvents on the reaction between arsenic tri-iodide and mercury di-iodide presupposed a knowledge of the behavior of these solvents towards the individual solutes. Hence the solubility of both substances in each solvent at boiling as well as room temperature had to be ascertained and changes in the appearence of the solute noted. In the course of the study of Donovan's Solution, two specimens of arsenic tri-iodide had been used. The one was a commercial sample which was dark brown and in solid masses as though it had been prepared by fusion of the elements. When triturated with the solvent this left a residue of, possibly elemental arsenic, a factor that interfered particularly with the study of the interaction of the two iodides in the presence of the several solvents. The other sample of arsenic tri-iodide had been specially prepared a year ago for the study of Donovan's Solution by the interaction of potassium iodide and arsenous acid in aqueous hydrogen chloride solution. This was a fine powder, orange in color, and left no interfering residues. Though preferable in this respect, its purity at times seems doubtful. The preparation made by precipitation as indicated, had white spots. Hence the experiments here recorded should be looked upon as first attempts to the complex problem and not as final records. In this connection it may be worth while to point out that an arsenic tri-iodide has been

[1] U. S. P. IX, p. 64; See also Dammar, "Handb. d. Anorg. Chem.," Vol. 3, p. 873 (1894).

[2] See "Remington's Practice of Pharmacy," ed. 6, Vol. 12, p. 941; Arny, "Principles of Pharmacy," ed. 2, p. 186; "Nat. Stand. Disp.," ed. 3, p. 934.

obtained by passing hydrogen iodide gas into a heptane solution of arsenic trichloride. This preparation is very dark brown as compared with the orange precipitate from the aqueous solution. Whether it is free from chloriodide has not yet been ascertained.

Tabulated results of the solubility experiments are herewith given:

Solvent 20 mils.	HgI_2 and AsI_3 1 Gm. each.	HgI_2 1 Gm.	AsI_3 1 Gm.
Water	Sol. in boiling, clear, light yellow solution when cold.	Nearly insol. in boiling; slight red ppt. when cold.	Sol. in boiling; clear light yellow solution when cold.
Alcohol	Part. sol. in boiling, light yellow ppt. when cold. Liquid dark red-brown.	Nearly insol, in boiling; slight red ppt. when cold.	Part. sol. in boiling; light yellow ppt. when cold; liquid dark red-brown.
Acetone	Part. sol. in boiling; red-yellow ppt. when cold; liquid dark red-brown.	Nearly insol. in boiling; slight red ppt. when cold.	Part. sol. in boiling; red-yellow ppt. when cold; liquid dark red-brown.
Chloroform	Part sol. in boiling; red powder insol. portion; orange ppt. when cold; liquid red-brown, violet.	Nearly insol. in boiling slight red ppt. when cold.	Part. sol. in boiling; orange ppt. when cold; liquid red-brown, violet.
Methyl salicylate	Nearly sol. in boiling; red - yellow powder insol. portion; orange ppt. on cooling; liquid yellow.	Sol. in boiling; yellow solution; red ppt. when cold.	Nearly sol. in boiling; red-yellow powder insol. portion; orange ppt. when cold.
Ethyl acetate	Sol. in boiling; few orange crystals when cold; liquid red-brown.	Part sol. in boiling; red ppt. when cold.	Sol. in boiling; orange ppt. when cold; liquid red-brown.

When arsenic tri-iodide is triturated with a little water a red-white mixture results. Further addition of water causes the red color to disappear, the white predominates, and finally upon the addition of sufficient water a clear solution results. This change was noticeable in the above experiments (excluding those of the mercuric iodide), varying to some degree with the solvent used.

From a brief survey of the table it seems feasible to say that if a combination results when mercury di-iodide and arsenic tri-iodide are brought into solution this combination is readily broken up again. For in comparing the results recorded in column one and three of the table, it is quite apparent that the precipitate formed and the appearance of the liquid remaining are approximately the same. That is, the same results are obtained from a solution containing the two iodides and a solution of the arsenic tri-iodide alone, in the same solvent.

Mercury di-iodide is considered practically insoluble in water, but soluble in the presence of iodides. Whether other halides would have a similar effect on the solubility of the insoluble mercury di-iodide was investigated in the following manner:

One-thousandth of a gram molecule of mercury di-iodide was triturated in a mortar with the gram molecular equivalents of potassium iodide, potassium bromide, potassium chloride and ammonium chloride, respectively. To each of

the mixtures one mil of water was added and the effect noted. A second, third, etc., equivalent of the respective halide was added in an attempt to dissolve the mercury di-iodide in the limited amount of water.

The following results were obtained:

$\frac{HgI_2}{1000}$ equiv. $\frac{KI}{1000}$ in one mil of water.

Three equivalents were necessary to effect a solution of the mercury di-iodide in the limited amount of water. No apparent change took place upon diluting the solution up to 25 mils.

$\frac{HgI_2}{1000}$ equiv. $\frac{KBr}{1000}$ in one mil of water.

Three equivalents of potassium bromide were necessary to effect the solution of the mercury salt. Upon diluting the mixture to 25 mils a red precipitate was formed.

$\frac{HgI_2}{1000}$ equiv. $\frac{KCl}{1000}$ in one mil of water.

$\frac{HgI_2}{1000}$ equiv. $\frac{KCl}{1000}$ in one mil of water.

Up to twenty equivalents of each halide were added in each case without effecting a solution. Furthermore, no solution resulted when the mixtures were diluted up to 25 mils.

A similar series of tests were conducted using arsenic tri-iodide in place of the mercury di-iodide. The following results were obtained:

$\frac{AsI_3}{1000}$ to $\frac{KI}{1000}$, $\frac{KBr}{1000}$, $\frac{KCl}{1000}$ and $\frac{NH_4Cl}{1000}$ respectively, in

one mil of water was treated in the same manner. Three gram molecular equivalents of each halide were added to separate portions of arsenic tri-iodide without effecting solution in the one mil of water. Upon diluting the mixture, solution took place after 25 mils of water had been added. However, under the same conditions 25 mils of water were sufficient to dissolve the arsenic tri-iodide alone. (This does not represent the solubility of arsenic tri-iodide in water, for if the mixture be allowed to stand for some time or if it be warmed less water is required to effect a permanent solution.)

From the results of the tests it may be assumed that the addition of potassium iodide facilitates the solution of the mercury salt in water; that the addition of potassium bromide facilitates the solution in certain concentration, while the addition of chlorides does not seem to aid to any perceptible degree. Furthermore, the addition of soluble halides does not facilitate the solution of arsenic tri-iodide in water.

10. *Volume of finished product.*—According to Donovan's original formula eight fluid ounces of product were prepared. The Dublin Pharmacopœia of 1851

brought the volume up to eight fluid ounces and six fluid drachms. In the British Pharmacopœia of 1885, the volume was brought up to 10 fluid ounces; in 1898 to one pint (Imperial); and in 1914 up to 1000 milliliters.

The 1850, 1860 and 1870 revisions of the U. S. P. diluted the solution of the iodides up to one pint; the 1880 revision up to 100 parts, regardless of the volume prepared; the 1890 revision up to 1000 cc. and the 1900 and 1910 revisions up to 1000 grams.

The following table gives the ratio of ingredients to finished product on an approximate percentage basis:

	AsI_3.	HgI_2.	Vol. of product.	Ratio.
Donovan	36.8 gr.	34.7 gr.	8 f. oz.	0.958 AsI_3 to 100 mils 0.904 HgI_2 to 100 mils
Dublin Ph.	36.5 gr.	36.25 gr.	8 f. oz. 6 dr.	0.863 AsI_3 to 100 mils 0.868 HgI_2 to 100 mils
B. P. 1885	45 gr.	45 gr.	10 f. oz.	1.10 to 100 mils
B. P. 1898	87½ gr.	87½ gr.	20 f. oz.	1.00 to 100 mils
	10 Gm.	10 Gm.	1000 cc.	1.00 to 100 mils
B. P. 1914	10 Gm.	10 Gm.	1000 Gm.	1.00 to 100 Gm.
U. S. P. 1850 U. S. P. 1860 U. S. P. 1870	35 gr.	35 gr.	8 f. oz.	0.901 to 100 mils
U. S. P. 1880	1 part	1 part	100 parts	1.00 to 100 parts
U. S. P. 1890	10 Gm.	10 Gm.	1000 cc.	1.00 to 100 mils
U. S. P. 1900 U. S. P. 1910	10 Gm.	10 Gm.	1000 Gm.	1000 to 100 Gm.

It would seem that an attempt had been made to follow the formula offered by Soubeiran *viz.*, a one p. c. solution of each iodide.

11. *Appearence of the finished product.*—All of the pharmacopœias containing this solution direct that it shall be filtered through paper. The U. S. P. of 1850 is the only one that directs the solution to be heated to boiling point before filtering. No reason for the heating has been found thus far, in the literature available. According to Donovan (see report) such a treatment would tend to decrease the strength of the solution, for in commenting on the volatility of the compound in solution he states "When the solution is evaporated by heat the salt passes off with the water, such is its volatility."

12. *Qualitative tests.*—The U. S. P. of 1890 is the first to describe this solution. The 1910 revision contains two tests. The first is a test for "iodide." The addition of lead acetate T. S. to the diluted solution causes a precipitate of bright yellow lead iodide. This may be expressed in the following manner:

$$2\,AsI_3 + 3\,Pb(CH_3COO)_2 = 3\,PbI_2 + 2\,As(CH_3COO)_2$$
$$HgI_2 + Pb(CH_3COO)_2 = PbI_2 + Hg(CH_3COO)_2$$

The second is a test for arsenic. Nascent hydrogen is formed by the action of hydrochloric acid on zinc. This reduces the arsenic tri-iodide to arsine. This gas coming in contact with the mercuric chloride, contained in the test paper, forms a yellow stain. This has been expressed in the following reaction:[1]

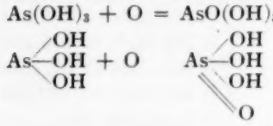
$$AsH_3 + 2\,HgCl_2 = 2HCl + AsH(HgCl)_2$$

[1] *Ber. d. Deut. Chem. Ges.*, 31, p. 594, Vol. 1, 1898.

12. *Assay.*—Only the 1910 revision of the U. S. P. gives a quantitative test for this solution. It consists of two parts. The first part is an assay for arsenous iodide.

As with Fowler's solution, the assay serves a double purpose. It is not only a check on the amount of arsenous iodide used in preparing the solution but also on the possible deterioration caused by the change of the trivalent arsenic to the pentavalent arsenic, due to the presence of oxygen, as expressed by the following reactions:

$$H_2O + I_2 = 2HI + O$$
$$AsI_3 + HOH = As(OH)_3 + 3HI$$
$$As(OH)_3 + O = AsO(OH)_3 \text{ or}$$



The amount of trivalent arsenic is determined by the use of $N/10$ iodine V. S.

I_2 equiv. O equiv. AsI_3 or

126.92 equiv. $\frac{455.72}{2}$ or

0.012692 equiv. 0.022786

Apparently the U. S. P. assumes that this solution contains AsI_3 and HgI_2 each in simple solution, or in such weak combination that each can be determined separately.

The second part is an assay for mercuric iodide. This is based indirectly on the total mercury content, obtained by the reduction of the mercury salt to metallic mercury by formaldehyde in an alkaline solution. Hence any reduction of HgI_2 to HgI in the solution previous to the assay (with the possible simultaneous oxidation of the arsenic tri-iodide to arsenic pentaiodide) is not indicated. (Compare with the assay of arsenous iodide part 1.)

The metallic mercury is dissolved in nitric acid with the formation of mercuric nitrate, and this titrated with volumetric solution of potassium sulphocyanate. This may be expressed in the following manner:

$$Hg + 2HNO_3 = Hg(NO_3)_2 + H_2$$
$$Hg(NO_3)_2 + 2KSCN = Hg(SCN)_2 + 2KNO_3$$

Hence,

HgI_2 equiv. Hg equiv. $Hg(NO_3)_2$ or

HgI_2 equiv. 2KSCN or

HgI_2 equiv. KSCN

$\frac{454.4}{2}$ equiv. 97.18

227.2 equiv. 97.18

0.02272 equiv. 0.009718

13. *Dose.*—A dose for this solution is given for the first time in the revision of 1900, expressed as—"Average dose, –.01 cc. ($1^1/_2$ minims"). The same dose is given in the 1910 revision expressed as—"Average dose, –Metric, 0.1 mil. Apothecaries, $1^1/_2$ minims." As the solution contains one per cent of each iodide, the amount of each per average dose of the solution is 0.001 Gm.; or 0.002 Gm. of total

iodides. The U. S. P. average dose for arsenous iodide is 0.005 Gm. and for mercuric iodide is 0.003 Gm. Apparently the combination of the two iodides in the solution is considered more toxic. Hence the dose of each in that form is considerably decreased.

APPENDIX.

On a new Chemical Combination of Arsenic, Mercury, and Iodine; and on its Employment as a Therapeutic agent.

BY M. DONOVAN, ESQ. (*The Dublin Journal of Medical Science*, 16, p. 277, 1839).

"About thirteen years since the iodide of arsenic was introduced on the continent as a therapeutic agent; but was little known as such in the British Isles until lately, when it was recommended by Dr. A. T. Thomson in the cure of psoriasis.

Judging from the medical effects of arsenic, mercury, and iodine, coincident as they are in some diseases, several practitioners have used them in conjunction. Circumstances led me to make experiments on the chemical agency of these three substances on each other; and as the results appear likely to prove useful, I am induced to publish them.

The red iodide of mercury has been shown by Bonsdorff to act in some respects as an acid, and to be capable of combining and forming crystallizable salts with several compounds which, in these cases, act the part of bases. These salts he denominates iodo-hydrargyrates.

I observed that when iodide of mercury, and iodide of arsenic, are triturated with as much water as is sufficient to render them moist, the scarlet color of the former, and the brown color of the latter disappear, and the resulting color is yellow; a sufficient indication that a chemical combination has taken place.

I found also, that when iodide of mercury, and iodide of arsenic, mixed, are heated in a glass tube, they melt, and form a compound so volatile, that, at a moderate temperature, it boils, evaporates, and produces concussions of the tube. This compound is very fusible; on cooling, after being melted, it concretes into a reddish brown, crystalline mass. Its vapour has the property of tinging flame of a pale violet hue.

The liquid obtained by presenting the crystalline mass to a large quantity of water, is yellow. When this solution is evaporated by heat, the salt passes off with the water, such is its volatility. Towards the end of the process, however, the solution becomes more concentrated, and its color deepens to brown. If the brown liquor be now distilled in a retort, the water and salt still come over together, and the liquor in the receiver is also brown. A small quantity of light shining, minute crystalline plates appear in both retort and receiver.

From these facts, it is plain that the crystalline, reddish brown mass, obtained by combining the iodides of mercury and arsenic, is an iodo-hydrargyrate of arsenic, according to the nomenclature adopted by Bonsdorff.

The medicinal effects of the three elements, iodine, mercury, and arsenic, of which this salt is composed, appear from the testimony of several writers, to coincide in their influence over certain diseases, as lepra, several forms of psoriasis and lupus. A chemical combination might possess increased efficacy: there is no doubt that it would be convenient, and that it would afford a greater security and certainty, in exhibition, than the three elements administered in any form. The mercury is here in such a state of combination that it may be exhibited in solution: and it is probably to the solubility of corrosive-sublimate, and hence to its absorbability, and transmissibility to the extreme vessles, that its superior power of quickly arresting the progress of syphilis, and of acting on the skin, is attributable. By the same causes also, the analogous effects of bromide of mercury may be produced. Pearson considered corrosive-sublimate 'peculiarly efficacious in promoting the desquamation of erruptions.' Willan believes it the only mercurial that is of any use in lepra. Perhaps the iodo-hydrargyrate of arsenic, as containing mercury in the soluble state, may support the same character, and even exceed it, by containing other useful elements. Corrosive-sublimate has been hitherto the only mercurial that could be exhibited in solution.

But there are obstacles which embarrass the exhibition of the solid combination of iodine, arsenic, and mercury, some of which arise from the difficulty of obtaining, for its preparation, pure iodide of arsenic of unvarying strength; and others, from its own nature.

The iodide of arsenic has been prepared by various processes. M. Henry merely melts 100 parts of iodine with 16 of arsenic. M. M. Serullas and Hottot recommend the same method; but add that the mass should be sublimed. M. Plisson boils 100 grams of iodine, 30 of levigated arsenic and one liter of water, until all smell disappears and the liquid becomes of a light yellow color. The solution, filtered when cold, is to be evaporated with free access of air; crystals will form, and when they are very nearly dry they are to be melted by heat: a feeble heat will expel all the water. In order to obtain a neutral compound, all the crystals which form on the side of the capsule must be continually returned into the liquid. (Plisson: Annales de Chimie et de Physique, XXXIX. 265.)

If Herny's process be inadequate without sublimation, Plisson has shown that sublimation causes decomposition of a portion of the iodide into metallic arsenic and iodine. And there is this difficulty in Plisson's process, that there is no obvious criterion whereby the total expulsion of the water can be judged; hence the iodide is liable to variation of strength. I have found in the iodide of arsenic prepared for sale, so much as one-twentieth of its weight of metallic arsenic. When such iodide of arsenic is dissolved in water, by means of iodide of mercury, the metallic arsenic remains undissolved.

An iodo-hydrargyrate of arsenic and mercury, formed from such an iodide of arsenic, will be liable to uncertainty of strength.

When iodo-hydrargyrate of arsenic is intended for administration in the form of pills; or when pills are formed (as is sometimes done) by combining the iodides of arsenic and mercury; there are other sources of uncertainty, which cannot fail to produce detrimental effects. One arises from the difficulty of weighing and mixing such minute quantities of the materials without loss; of diffusing them equally through a pill mass, and dividing it into pills containing perhaps but one-sixteenth of a grain of each ingredient. Add to this the chance that some injury is done by the substance employed to give bulk, or to form a mass, and the certainty that spatulas, and other metallic instruments, whether of brass, silver, or steel, will produce decomposition of these minute quantities to a considerable extent. All these considerations evince the inexpediency of this form of exhibition. It is even questionable how far a pill is safe consisting of three escharetic substances, exerting their concentrated power on a single spot of the stomach, in consequence of their being in the solid state.

The form of solution is by much the best when proper precautions are taken. In order to render the exhibition of these active ingredients safe, the formula must be capable of furnishing a solution, which, when prepared by different hands, from different materials, and at different times, will always be of the same composition and strength. Without this quality, a practitioner, who has urged the dose of a weak solution, may, by persevering in the same dose with a strong one, do great mischief.

To insure this equality of composition, and therefore of strength, at all times, the first condition is, that the three component ingredients shall be perfectly pure. The metallic arsenic of commerce should be powdered and sublimed from black flux: the iodine should be washed with water, strongly pressed between folds of bibulous paper, and sublimed; and the mercury should be recovered from red precipitate by distillation.

The next requisite for constancy of composition is, that the quantities of the ingredients employed must be entirely dissolved in the solution; we must be sure that the three substances are in full operation to the fullest extent of their quantity.

Lastly, the compound must be permanent, not liable to spontaneous decomposition, nor to injuries arising from careless exposure to light or air.

I believe that all these conditions are fulfilled in the following process:

Triturate 6.08 grains of finely levigated metallic arsenic, 15.38 grains of mercury, and 50 grains of iodine, with one drachm measure of alcohol, until the mass has become dry, and from being deep brown has become pale red. Pour on eight ounces of distilled water; and after trituration for a few moments, transfer the whole to a flask; add half a drachm of hydriodic acid, prepared by the acidification of two grains of iodine, and boil for a few moments. When the solution is cold, if there be any deficiency of the original eight ounces, make it up exactly to that measure with distilled water. Finally filter.

The theory of this process need scarcely be adverted to. By the long-continued trituration of arsenic, mercury, iodine, and alcohol, the metals are converted into iodides, which combine.

The mass by solution in water is converted into an hydriodate of arsenic and mercury. The quantities of the two metals are so adjusted, that, when converted into protoxides by decomposition of a portion of the water in which they are dissolved, there will be eight grains of protoxide of arsenic, and sixteen of protoxide of mercury. The quantity of water is such that each drachm measure of the solution will contain exactly one-eighth of a grain of protoxide of arsenic, and one-fourth of a grain of protoxide of mercury. I conceive that the quantity of mercury ought to be double that of the arsenic, in order to insure a slow and moderate, yet adequate mercurial action, along with the proper effect of the arsenic.

Of this *liquor hydriodatis arsenici et hydrargyri*, each drachm measure consists of

Water, one drachm.
Protoxide of arsenic, one-eighth of a grain.
Protoxide of mercury, one-fourth of a grain.
Iodine (converted into hydriodic acid) four-fifths of a grain.

The color of the solution is yellow, with a pale tinge of green; its taste is lightly styptic. It cannot be properly conjoined with tincture of opium or with sulphate, muriate, or acetate of morphia; for all these produce immediate and copious precipitates in it. Hence if opiates are to be used during the exhibition of this arsenico-mercurial liquor, they must be taken at different periods of the day. Tincture of ginger produces no bad effect. The following formula is proper:

℞ Liquoris Hydriodatis Arsenici et Hydrargyri drachmas duas.
Aquae Destillatae uncias tres cum semisse.
Syrupi Zingiberis semunciam, Misce.
Divide in haustus quatuor. Sumatur unus mane nocteque.

Thus one-sixteenth of a grain of protoxide of arsenic, and one-fourth of a grain of protoxide of mercury, would be taken in each dose, along with two-fifths of a grain of iodine, which, being in the state of combined hydriodic acid, will be much diminished in energy of medical effect. This is no doubt the proper dose to begin the exhibition of arsenic with; but it will be very soon necessary to increase it.

The division into draughts is here necessary: first, to insure accuracy of the dose, so essential in the case of this active medicine: and next, to prevent injury to the ingredients by the use of a metallic spoon as a measure—the general way in which, unfortunately, the dose of a medicine is determined."

LOSS ON IGNITION OF TALC.*

BY JOSEPH L. MAYER.

A few months ago I was retained in a case involving loss on ignition of a sample of talc, upon which two competent chemical laboratories had reported results that differed widely.

The United States Pharmacopœia under Purified Talc says "Purified Talc when subjected to ignition at red heat loses not more than 5% of its weight."

The several cars of talc which were the subject of this controversy were not intended for pharmaceutical or toilet purposes, but nevertheless it appeared to me that "red heat" would be the proper temperature to observe in making the analyses.

Walker and Wilson—U. S. Department of Agriculture, *Bureau of Chemistry Circular*, No. 101, page 2, "The Ignition of Precipitates without the Use of the Blast Lamp"—report the following results of a series of tests they made of temperature measurements with various types of burners, by inserting a thermo element through a hole in a platinum crucible cover: "To the surprise of the experimenters there was practically no difference in temperature when different types

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* New York State Pharmaceutical Association, 1925.

of burners which are in common use were employed—the old style Bunsen giving about the same temperature as modern types when of the same size. Similar experiments were made with Meker burners and it was found that both large and medium burners gave the same temperatures in the crucible; that is, about 1.025° C. or about 75° higher than that obtained by an ordinary burner." Being in doubt as to whether the results on the sample in question would be identical whether a Meker or Bunsen burner were employed I made the following series of analyses, the same sample of talc being employed in all tests:

(*a*) One gram of talc was placed in a porcelain crucible and heated over a medium sized Meker burner to constant weight. The material lost 2.68% of its weight.

(*b*) One gram of talc heated in a porcelain crucible over an ordinary Bunsen burner at red heat until the weight was constant, lost 0.93% of its weight.

(*c*) One gram of talc heated in a deep platinum dish over the above noted medium sized Meker burner until the weight was constant, lost 2.80% of its weight.

(*d*) One gram of talc heated in the deep platinum dish over the ordinary Bunsen burner at red heat until the weight was constant, lost 0.87% of its weight.

The proper method of employing a Meker burner is to place the crucible or dish being heated just above the grid (about one or two millimeters) and in the above tests with the Meker burner this procedure was followed. Another test was made as follows:

(*e*) One gram of talc was placed in a deep platinum dish and heated until constant weight was obtained, the Meker burner being employed in such a manner that the tip of the flame just touched the bottom of the dish, which was 15 centimeters above the grid. The sample lost 1.55% of its weight.

Results by all methods were as follows:

(A)	Porcelain Crucible	Meker burner	Loss 2.68%
(B)	Porcelain Crucible	Bunsen burner	Loss 0.93%
(C)	Platinum Dish	Meker burner	Loss 2.80%
(D)	Platinum Dish	Bunsen burner	Loss 0.87%
(E)	Platinum Dish	Meker burner improperly used	1.55%

SUMMARY.

1. The loss on ignition of talc is very much lower when a Bunsen burner is employed in the analysis than a Meker.

2. The results are practically the same whether the analysis is made in platinum or porcelain.

3. To obtain concordant results in the employment of a Meker burner the crucible or dish being heated should be placed just above the grid (about one or two millimeters).

4. In cases where talc may be the subject of a controversy it should specifically be stated whether a Bunsen or Meker burner is to be employed in determining loss on ignition.

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COD LIVER OIL EXTRACTS—I.*

Chemical Composition and Properties.

BY ALBERT K. EPSTEIN AND B. R. HARRIS.

In a preliminary survey of the literature pertaining to extracts of cod liver oil in preparation for an investigation of their merits, it became evident that there was dearth of published information on the subject. The "United States Dispensatory" and "Merck's Index" give a little space to these preparations but barring these, practically no data could be found on this subject. The manufacturers and firms offering such materials for sale had very little of chemical information regarding them, other than the amount of cod liver oil which their extracts "represented." By this they mean the inverse ratio of the weight of extract, obtained by treating cod liver oil with a volatile solvent such as ethyl alcohol or ether, to the weight of the oil treated. To take a concrete example, if 100 pounds of cod liver oil give, on extraction, 4 pounds of extract, then the resulting product is spoken of as "representing" or "being equivalent to" 25 times its own weight of cod liver oil. The writers have no reason to take exception to such a description of cod liver oil; it has its place. Yet it is easy to see that such a characterization might easily be abused or misinterpreted. For example, if it were desired, a solvent might be chosen which is capable of extracting only a very minute proportion of the cod liver oil. In such a case, the product might truthfully be represented, on this basis, as being equivalent to several hundred or even several thousand times its own weight of cod liver oil. Such a characterization would be correct and yet might not be a fair representation of the merits of the extract. It is quite obvious that the quantity of extract obtained cannot, alone, be taken as a measure of the value of a product of this sort. The nature of the solvent used and the procedure by which the extract is made and preserved must necessarily play an important part in determining the merits of the extract.

Judging from the experience gained thus far and recorded in the scientific literature, in connection with the estimation of the therapeutic value of cod liver oils, it appears that the evaluation of cod liver oil extracts, as well, will have to rest on some kind of animal assay; on one kind or other of suitably controlled feeding experiments.

However, before proceeding with a biological assay, it was thought desirable to gain some insight into the chemical composition of these cod liver oil extracts. It was with this object in view that the work reported herein was undertaken.

The extracts, described in Table I, are said to be available on the American market. The alcohol extract, "Gaduol" is described as representing 20 to 25 times its own weight of cod liver oil and the ether extract, "Jecorrol," 15 to 20. Both preparations were similarly tested by the usual analytical methods. The results are recorded in Table I.

The extracts are extremely viscous, highly colored, almost black liquids with a distinctly fishy odor. The ether extract has a specific gravity of 0.840 and the alcohol extract, 0.920.

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* Read at the meeting of Chicago Branch, A. Ph. A., May 8, 1925.

TABLE I.—COMPOSITION OF COD LIVER OIL EXTRACT.

(All numerical figures represent percentages.)

	Loss in weight on 3 hours' heating at 110° C.	Total nitrogen.	Volatile ammoniacal nitrogen.	Ratio of volatile to total nitrogen.	Free fatty acids in terms of oleic acid.	Saponifiable matter in terms of triolein.	"Unsaponifiable" matter.	Total phosphorus.	Ash.
Ether extract	0.20	0.439	0.0334	7.62%	37.1	20.2	42.5	0.128	0.238
Alcohol extract	23.5	3.18	0.840	26.4%	54.8	10.4	29.9	trace	4.91

Comments.—Though claims are frequently made for the iodine content of these preparations, careful analysis failed to show the presence of either iodine or bromine. This agrees well with statements to be found in the literature in connection with cod liver oils, to the effect that the iodine containing substances are not extractable by alcohol.

It will be noticed that more than half of the extract consists of therapeutically inert material such as free fatty acids and saponifiable fat. Of course, the "unsaponifiable" is sufficiently high to represent an ample proportion of such therapeutically active matter as vitamins and the like.

Considerable difficulty was experienced in determining the "unsaponifiable matter" by the usual technic, owing to the formation of exceptionally troublesome emulsions. The figure given in Table I, above, is a calculated figure obtained by subtracting from 100 the sum of the "free fatty acid," "saponifiable fat" and "ash" figures. While this, no doubt, is not accurate, it nevertheless, furnishes a good approximation.

It was to be expected that an ether extract would contain more phosphorus than an alcohol extract since phospholipoids and similar substances are much more soluble in ether than in alcohol. However, the differences between these preparations cannot be attributed wholly to the solvents used, since that would be rigorously justifiable only if two portions of one batch of oil had been separately treated with ether and alcohol and the resulting extracts then compared. Since, in all likelihood, these extracts were not prepared from the same oil, some of the differences at least are apt to be due to differences in composition of the original materials subjected to extraction.

Calculation of the "free fatty acid" and "unsaponifiable" figures back to a whole oil basis on the assumption that the extracts represent approximately twenty times their own weight of oil, sheds some light on the composition of the oils.

TABLE II.—PROBABLE COMPOSITION OF THE COD LIVER OILS.

	Free fatty acid.	Unsaponifiable.
Ether	1.9%	2.1%
Alcohol	2.7%	1.5%

The above figures tend to indicate that the extracts were prepared not from the pale oil used in pharmaceutical preparations, but rather from the brown oil obtained from livers which had been allowed to attain a more or less advanced stage of putrefaction or from some other oil of inferior grade. Indeed it is difficult to understand just how an ether extract might be prepared, since ether is miscible with cod liver oil. It is therefore more likely that the "ether extract" is an extract of the residual liver material remaining after the expulsion of the liver oil.

The most striking difference, perhaps, is in the proportion of material volatile at 110° C. A distillate obtained from 100 grams of the alcohol extract, between

110° and 150°, consisted largely of amines with no significant amounts of water or alcohol. This distillate may also have contained some low boiling esters of the lower fatty acids reported to be present in cod liver oil.[1]

While, as pointed out above, comparisons between the extracts can have only a limited value, since they were in all likelihood, made from different oils, a little more reliance may be placed on comparisons of ratios within the extracts. For example, the alcohol extract contains approximately eight times as much of total nitrogen as the ether extract. The solvent or the composition of the oil form which the extract was made, or both, may be responsible for this and the validity of the comparison suffers from this uncertainty; however, a comparison of the respective ratios of volatile to total nitrogen is not open to quite as serious an objection. It will be observed that in the case of the alcohol extract this ratio is almost four times as great as for the ether extract.

It should be stated at this point—that the volatile ammoniacal nitrogen was determined by treating a weighed quantity of extract with saturated sodium carbonate solution (and a small amount of capryl alcohol, to minimize frothing), aerating the mixture at room temperature for five hours into a known volume of standard tenth normal sulphuric acid and titrating back, the excess of acid with standard sodium hydroxide solution. The result expressed in terms of nitrogen is a fair index of the content of volatile, basic, nitrogenous substances.

The solubilities of the extracts are of interest. Both are completely soluble in xylene, chloroform, carbon disulphide and glacial acetic acid. Acetone dissolves the ether extract almost completely, whereas the alcohol extract is only partially dissolved by this solvent.

The chloroform and carbon disulphide solutions were treated dropwise with concentrated sulphuric acid, with shaking, to ascertain the presence of the lipochromes and biliary coloring matters which are said to cause cod liver oil to respond to this test.[2] In no case could the characteristic violet tint be obtained, as compared with an authentic cod liver oil control. Addition of sulphuric acid did cause a change in color to a brownish red but the preliminary violet shade was never detected. Since there was some difficulty in observing the reaction because of the masking effect of the colors of the extracts, themselves, in chloroform or carbon disulphide solution, these solutions were treated with absorbent charcoal to decolorize them as far as possible and were then subjected to the sulphuric acid test. This treatment, however, did not materially alter the results of the tests. From these observations it may be concluded that the ether and alcohol extracts herein considered do not contain at all or do not contain in their original condition those substances which cause cod liver oil to respond to the sulphuric acid test.

As indicated in the early part of the paper, the writers look upon the chemical study of these extracts as merely of accessory interest; the determination of their actual therapeutic value will no doubt have to rest on a suitable biological assay.

In closing, the authors should like to reiterate, as stated above, that a systematic, comparative study of an ether and alcohol cod liver oil extract would consist of treating two portions of the same batch of material and analyzing the respective

[1] Lewkowitsch and Warburton, "Chemical Technology and Analysis of Oils, Fats and Waxes," Macmillan & Co., London, 1922, Vol. II, p. 441.

[2] *Ibid.*, Vol. II, pp. 435, 453.

products. However, that is not the purpose of this paper. It was the aim of the authors to report, in the JOURNAL literature, an analysis of pharmaceutical cod liver oil extracts which are being offered in the American market for the manufacture of so-called cod liver oil tablets, wines, elixirs and other proprietary preparations, so that the industry may be acquainted with the composition of these extracts.

Thanks are due Messrs. McKee and Larson of the Standard Laboratories, Chicago, Illinois, who were kind enough to furnish the materials used in this investigation.

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NEW LIGHT ON COD LIVER OIL.*

BY BERNARD FANTUS, M.D.

There is one disease in which the special value of cod liver oil is now well established. This disease is rickets. Though the opinion of clinicians regarding its curative value in this disease had long been well crystallized, it remained for experimental demonstration upon laboratory animals to furnish not only unequivocal proof of this but also the key to its mode of action.

VITAMIN D CURES RICKETS.

The recent rapid development of our knowledge in this field we owe to the fact that lower animals, and among them rats, are susceptible to rickets; and that large numbers of experiments can so easily be conducted upon rats. These experiments have shown not only that cod liver oil is curative of rickets; but also that a concentrate could be prepared representing all the antirachitic activity of the original oil (Funk, 1924). They have shown that the antirachitic principle is entirely stable to saponification, in other words that the oil can be boiled with strong alkali so as to destroy the fats completely without impairment of the antirachitic potency. This points to the desirability of subjecting to intensive study the unsaponifiable substances isolated from this fat. It has been suggested, but not yet proved, that sterols, cholesterin in animals and the phytosterols of plants, carry the activity.

In the present state of our ignorance of the essential chemical nature of this antirachitic factor, it is classed among the vitamins; and recent studies have forced the designation "Vitamin D" upon it. At first, the antirachitic factor was not distinguished from vitamin A, as both are oil-soluble; and both are contained in cod liver oil. More recently it was shown that they differ from each other. Thus, while butter fat promotes growth and prevents xerophthalmia—in other words, contains vitamin A—it is of little use in the prevention of rickets. Coconut oil, on the other hand, can prevent rickets, but does not promote growth or prevent xerophthalmia. Furthermore, it has been shown by E. A. Park and his associates at Johns Hopkins that, by limited oxidation of cod liver oil, one can destroy vitamin A without destroying the antirachitic factor. Hence, the antirachitic factor is different from vitamin A. It has provisionally been designated vitamin D.

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ULTRAVIOLET RAYS CURE RICKETS.

Rickets is a disease found only in civilized communities, most especially in large cities; and in animals kept under artificial conditions. In farming districts the disease is very rare; among savages, practically unknown. Wild animals likewise are free from it. It is incurred most especially during winter. It has, on the other hand, long been known that "open air" treatment cures rickets.

It remained for the observations of Huldschinsky (1919) to prove, by laboratory demonstration, that light, or rather the ultraviolet rays of it, are the specific preventive and curative agent. Light filtered through glass is of no value because glass, though it transmits the visible light rays, does not permit the ultraviolet rays to pass through. This has led to the establishment, on a firm basis, of the treatment of this disease not only by sunlight but also by the ultraviolet (or actinic) rays, which can be produced artificially by means of a quartz mercury vapor lamp and employed when exposure to the sun is impossible.

The puzzle how two such dissimilar agents as sunlight and cod liver oil came to have identical effects has apparently just been solved by two independent investigations that approached the problem from different angles.

IRRADIATED OILS CURE RICKETS.

Harry Steenbock[1] and his associates at the University of Wisconsin made the surprising observation about 1923 that, when animals exposed to ultraviolet radiations, were kept in the same cage with nonirradiated animals, neither developed rickets, though both groups were on a rickets producing diet. They first assumed that secondary radiations emanating from the irradiated animals might be responsible. But experiments soon decided that it was the excreta of these animals that had become activated; and that enough of these was taken in by the others to obtain the required antirachitic factor. About the same time, English investigators (Goldblatt and Soames[2]) showed that livers taken from rats which had been exposed to the quartz mercury vapor lamp were able to induce proper growth in rats, while livers taken from nonirradiated rats were inactive. Assuming that light synthesized the antirachitic factor, the investigators exposed the food and later various oils to quartz mercury light for thirty minutes. Much to their surprise they found that various foods and fats, such as lard and olive oil and others, previously devoid of the antirachitic factor, had become antirachitic. They also found that excessive illumination caused these oils and even cod liver oil to lose their antirachitic activity. This shows how unstable this vitamin is in respect to radiant energy. Still, when properly kept, in well stoppered bottles in the dark it seems perfectly stable.

ULTRAVIOLET RAYS PRODUCE VITAMIN D.

It is evident that, when light shines directly on the animal body, it acts in part at least by virtue of the fact that it makes antirachitic certain substances already present. It is also reasonable to assume that cod liver oil owes its antirachitic activity to solar irradiation. Its exceptionally high degree of action could hardly

[1] Harry Steenbock and Amy L. Daniels, "Irradiated Foods and Irradiated Organic Compounds." *Jour. A. M. A.*, Vol. 84 (April 11) p. 1093 (1925).

[2] H. Goldblatt and K. M. Soames, *Biochem. J.*, 17, p. 446 (1923).

be due merely to direct insolation of the cod fish. It is more probable that both the oil-soluble vitamins A and D are chiefly formed by green plants, for their own use, with the aid of the ultraviolet rays of the sun. When these are eaten by fish the surplus of the vitamins that are oil-soluble is stored in oil, most especially in the liver. Cod fish receive the vitamins indirectly by eating other fish; and, as may be expected, the liver oils of many other fish besides the cod have similar properties.

The same thing happens with land plants and animals though the vitamin concentration of these does not seem to become quite as great. Birds store a liberal supply of antirachitic vitamin in the yolk of the egg for use by the developing bird. It is not surprising, therefore, to find that yolk of egg is a good preventive of rickets. The young mammal receives vitamin D in the milk, though cow's milk is relatively poor in it, especially during the winter season when the animals do not obtain green food. Human milk is richer in vitamin D than cow's milk. This is why breast-fed babies are so much less liable to rickets than the bottle-fed.

VITAMIN D PRODUCES ULTRAVIOLET RAYS.

A fascinating theory as to the probable mode of action of the substances curative of rickets has been advanced by Kugelmass and McQuarrie[1] who find that such bodies emit ultraviolet rays on oxidation. When they expose cod liver oil, yolk of egg, sperm oil to a current of oxygen and cover the container with a photographic plate protected by glass, the plate is not blackened. When, on the other hand, the sensitive plate is protected by quartz, blackening occurs. The necessary conclusion is that, upon oxidation of these bodies, ultraviolet rays are produced. As these bodies are oxidized in the animal system, they must yield ultraviolet rays to its cell. A considerable number of substances not curative of rickets did not emit such radiation, when exposed to the same experimental conditions.

These observations may not only give us a method of measuring the therapeutic potency of substances to be used in the treatment of rickets, but they also offer a basis for wide-reaching speculations.

We have known for a long time that all life requires a certain amount of heat. Plants, during their growing period, store excess heat in the form of starch and other organic compounds, to be liberated by oxidation of these compounds during periods of growth, when there is a deficiency of heat. The higher animals have developed this second part of the mechanism to such perfection that they can carry on active existence in the presence of an external temperature so low as to paralyze all vegetable life. They do this by making use of the caloric energy providently stored in the plant for its own use and that of its offspring.

Now it seems that the same thing is true of radiant energy.[2] That the growth

[1] I. N. Kugelmass and I. McQuarrie, "The Photoactivity of Substances Curative of Rickets and the Photolysis of the Oxy-Products by Ultraviolet Radiation." *Science*, 60 (Sept. 19), 272 (1924).

[2] It might perhaps be well to explain that radiant energy is entirely different from heat. Heat is a movement in the molecules of matter; radiant energy, a wave motion in the all pervading ether. All the force the sun sends out is in the form of radiant energy, which is *not* heat—for the space through which it traverses is bitter cold—though it can be converted into heat when it strikes molecules of matter.

and proper development of plants depend upon radiant energy, such as that emitted by the sun, is a well known fact. We believed, however, that animal cells were independent of the necessity of direct irradiation for proper growth. The observations cited may make it necessary for us to revise this opinion. The far reaching generalization is dawning upon us that, without radiant energy acting directly upon it, no organism can grow properly.

An interesting parallel is to be found in connection with the clinically well established value of cod liver oil in tuberculosis. This disease is, like rickets, a disease of civilization and of darkness. Out-door-life and sunshine have a therapeutic value in both, and so has cod liver oil. Cod liver oil is, of course, not curative in tuberculosis as it is in rickets, because in the latter it supplies the deficiency that causes the disease, while the former is a much more complicated process, being a fight between the tissue cells and the tubercle organisms. How the cod liver oil helps in this fight whether, by favoring through its vitamins, the proper maturing of tissue cells and the walling off of the germs, or in some other manner, remains to be determined by future studies.

A PARTIAL ANALYSIS OF THE FRUIT OF EUPATORIUM URTICÆFOLIUM.

BY F. S. BUKEY.

Eupatorium urticæfolium Reichard[1] (*Eupatorium ageratoides* L.f.) is known by the common names of white snakeroot, rich weed and white sanicle. The name white snakeroot is the most commonly used. The plant is very widely distributed. Its range extends from Canada to Georgia and westward to Kansas and Nebraska. The plant appears to be most common in Indiana, Illinois, Ohio, Pennsylvania New York and the New England states. The conditions best suited to its growth are rich woods bordering streams, or in shaded mountain woods usually on the northern slopes. In northern Ohio the white snakeroot is found mostly on the northern slopes of wooded hillsides. The plant is a member of the Composite family, and of a genus in which there are some nineteen species in the region covered by "Gray's Manual" (seventh edition). Many of these species resemble each other so closely as to render recognition extremely difficult.

Eupatorium urticæfolium is a herbaceous perennial one to two meters in height. The surface of the typical plant is practically free from trichomes and other hairy growths. The leaves are opposite on long, slender, very much branched stems. They vary from five to fifteen centimeters in length, and from three to eight centimeters in width. They are netted-veined, palmately three-nerved. The blade is thin and broadly ovate, having an acuminate apex, dentate-serrate margin and a truncate or cordate base which in the smaller leaves may be abruptly narrowed into a slender petiole. The petiole is usually three to seven centimeters in length. The inflorescence is a compound corymb, each head having from ten to thirty flowers. The receptacle is flat. The involucre is of narrow lanceolate

[1] The species was identified by Dr. E. E. Stanford, Head of the Department of Pharmacognosy, Western Reserve University School of Pharmacy.

bracts two to four millimeters in length which appear mostly in one series. The corollas are white with pubescent lobes. The fruit is a glabrous achene of about five millimeters in length and half a millimeter in width. The pappus is composed of a single row of from twenty-five to thirty fine spreading hairs.

Eupatorium urticæfolium has been a subject of study for the last seventy-five years. Most of the work has been largely pharmacological and concerned with the supposed causal relationship of this plant to the disease known as Trembles in animals and Milksickness in man. The most extensive recent study which has come to the writer's attention is that of F. A. Wolf, R. S. Curtis and B. F. Kaupp.[1] This publication also contains an excellent bibliography.

The principal chemical researches reported thus far have been in attempts to isolate from the herbage of the plant a toxic constituent which might be connected with the disease. E. L. Moseley[2] found the leaf of white snakeroot to contain 8 per cent of ash, and the stems only 4 per cent. His ash analysis of the leaf showed 1.8 per cent of CaO, 1 per cent of MgO and 0.1 per cent of Fe_2O_3 while 0.9 per cent of CaO and 0.3 per cent of MgO were present in the stems. He also reports the presence of $AlPO_4$, which he thought for some time was the cause of the disease. Later, Moseley[3] found a resin which he thought was the toxic agent. C. B. Jordan, J. P. Whelan and W. F. Gidley[4] found that the herbage contains a volatile oil which is lighter than water and has an odor of pinene. They found that on acidifying an extract of the plant with concentrated HCl a volatile substance was formed which was heavier than water, yellowish brown in color and with an apple-like odor. They also state that it is possible that organic aluminum compounds are present.

The object of the experiments reported in this paper has been to determine the chemical composition of the fruit of *Eupatorium urticæfolium*. Because only a limited supply of the fruit was available, the scope of the experiments was necessarily somewhat limited. A supply of white snakeroot was found growing on a hill-side in one of the city parks. The material was gathered in the early part of September before frost. The leaves and flower heads were stripped from the stalks and thoroughly dried. The dried material was then shaken in a sieve which had meshes of about half an inch. The fruit passed through leaving the leaves and stems in the sieve. These were retained for further experimental work. The pappus was removed from the fruit by rubbing it between the palms of the hands and then sifting through a No. 20 sieve held in front of a fan. This latter process was similar to the old method of cleaning grain by use of the fanning mill. After repeating this process several times the achene was almost entirely freed of the pappus. The cleaned fruit was ground so that it would pass a No. 60 sieve.

The ground achene was greenish gray and of an oily appearance due to the presence of fatty material. It was thought best to remove the fatty substance in order to facilitate analysis. Therefore a small amount of the powder was re-

[1] *Technical Bulletin* 15 (1918), North Carolina Agricultural Experimental Station.

[2] "The Cause of Trembles and Milksickness," *Med. Rec.* (N. Y.), 75. No. 20, 1909.

[3] "Milksickness and Trembles Caused by Resin of White Snakeroot," *Med. Rec.* (N. Y.), 92. No. 10, 1917.

[4] A Study of the Cause of Trembles (in Domestic Animals) and Milksickness (in Man). Jour. A. Ph. A., Vol. 13, No. 3, 1924.

tained and the remainder percolated to exhaustion with petroleum benzine (b. p. 38° C.). The benzine was removed from the percolate by distillation, care being taken in this step to keep the temperature below 100° C., so as not to cause any change in the oil obtained. After the benzine had evaporated from the marc the latter was found to be light brown due to the loss of coloring substances.

The following procedure was taken to determine what per cent of the fruit was soluble in benzine. Three ten-gram samples were weighed from material which had been dried in an oven at 105° C. for an hour. These samples were placed in weighed soxhlet thimbles and extracted in a soxhlet apparatus for eight hours, using petroleum benzine as a solvent. At the end of the extraction the thimbles were removed, dried at 105° C. for an hour and then weighed. No attempt was made to determine the per cent of oil from the extracts as the error in manipulation would be too great.

	No. 1, grams.	No. 2, grams.	No. 3, grams.
Wt. of soxhlet thimble	7.1648	7.4803	6.9841
Wt. of the thimble and fruit	17.1648	17.4803	16.9841
Wt. of the fruit	10	10	10
Wt. of the thimble after extracting	15.4394	15.7422	15.2504
Wt. of the oil in the fruit	1.7254	1.7381	1.7337
Per cent of oil in the fruit	17.25%	17.38%	17.33%

Average per cent of oil 17.32.

The product obtained on the evaporation of the benzine was a viscid dark greenish brown oil having a heavy narcotic like odor. On attempting to determine the boiling point decomposition took place at about 260° C., a resinous substance being formed. The solidifying point of the oil was found to be —24° C., determined by use of CO_2 snow. Like most fixed oils obtained from plants, it was found to be insoluble in cold alcohol and only very slightly soluble in hot alcohol. It was, however, soluble in such volatile solvents as chloroform, benzol, ether and carbon tetrachloride. The specific gravity was 0.9116 at 20° C., determined by use of a pyknometer. The refractive index (Abbe) was 1.475 at 20° C. The iodine number was determined by the Wijs chloriodine method. Six different determinations were made and the iodine number as determined was between 145.3–155.2. The saponification number was determined by the Koettstorfer method as between 157.3–163.2. A determination of the insoluble fatty acids showed about 95 per cent. The solidifying point of these fatty acids was —23° C. and the refractive index 1.483 at 22° C. The low solidifying point of the fatty acids would indicate that a large portion of the unsaturated acids were present. On exposure to the air a skin formed on the surface of the oil. These two points lead to the conclusion that the oil is of the drying type.

The water soluble content of the fruit was next determined. Three ten-gram samples which had been dried at 105° C. for an hour, were placed in liter boiling flasks with 800 cc. of water and the mixture boiled for an hour and then filtered. The residue was returned to the flask and the process repeated twice. After the final washing the residue was removed from the filter, dried at 105° C. for an hour, and then weighed. The results showed an average loss in weight of 3.2630 grams. The water soluble content of the fruit was therefore 32.63 per cent.

The amount of moisture in the fruit was determined by heating three one-

gram samples at 105° C. for an hour. The average loss was 0.0530 gram. Therefore the amount of moisture present was 5.30 per cent.

The following determinations with ash were made by the A. O. A. C.[1] methods. The ash present (*loc. cit.*, p. 105) was found to be 8.82 per cent. The water soluble ash was 4.40 per cent, the water insoluble ash 4.29 per cent (*loc. cit.*, p. 105). The alkalinity of the soluble ash was equal to 2 cc. of N/10 HCl per gram of ash (*loc. cit.*, p. 105). The alkalinity of the insoluble ash was equal to 6 cc. of N/10 HCl per gram of ash (*loc. cit.*, p. 106). The acid insoluble ash (*loc. cit.*, p. 257) was 0.73 per cent.

An analysis was made to determine the elements present in the ash. About ten grams of ash was placed in 100 cc. of water, this was heated to boiling and filtered. This filtrate gave positive tests for chlorides, sulphates, phosphates and potassium. The tests indicated that there was only small amounts of chloride and phosphate present. The residue was then added to 50 cc. of dilute HNO_3, heated to boiling and filtered. This filtrate gave positive tests for aluminum, calcium and phosphates. The residue was mostly silicates and carbon. The aluminum was determined quantitatively as Al_2O_3, with the following results.

	No. 1, grams.	No. 2, grams.	No. 3, grams.
Wt. of ash used	1	1	1
Wt. of Al_2O_3 present	.2849	.2845	.2856
Wt. of Al_2O_3 in 1 gram of fruit	.0250	.0251	.0252
Per cent of Al_2O_3 in the fruit	2.50%	2.51%	2.52%

The weight of Al_2O_3 in 1 gram of fruit was obtained by multiplying the weight of Al_2O_3 in the ash by 0.0882 gram which is the ash equivalent of 1 gram of fruit. A check determination was made using the fruit in place of the ash. This resulted in 2.53 per cent of Al_2O_3. The average of the two methods being 2.52 per cent.

A determination of the crude protein made by the Gunning method showed an average result of 25.07 per cent. The following were the results of the experiment.

	No. 1.	No. 2.	No. 3.
Number of cc. of N/10 HCl used in neutralizing the NH_3 formed	28.5 cc.	28.6 cc.	28.8 cc.
Wt. of sample used	1 gram	1 gram	1 gram
Determined wt. of the protein	.2495 gram	.2504 gram	.2521 gram
Per cent of protein	24.95%	25.04%	25.21%

The crude fiber was determined to be 20.37 per cent by A. O. A. C. methods. Experimental results were as follows:

	Grams.	Grams.	Grams.
Wt. of sample used	2	2	2
Wt. of residue	.4500	.4753	.4645
Wt. of ash	.0485	.0618	.0574
Wt. of crude fiber	.4015	.4135	.4071
Per cent of crude fiber	20.08%	20.67%	20.35%

The form of the aluminum was determined by the following method. An aqueous extract of the fruit was tested for the presence of aluminum with negative results. The residue left after this extraction was added to a dilute solution of

[1] "Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists," Second Edition (1919).

HNO_3 heated to boiling and filtered. On adding NH_4OH to this filtrate a heavy precipitate of $Al(OH)_3$ formed. A confirmatory test with $Co(NO_3)_2$ gave positive results. The only basic radical present was phosphate. This would indicate that aluminum was present in the form of the phosphate.

SUMMARY.

The principal results of the above experiments may be summed up as follows:

1. The fruit contains a drying oil having the following properties.

Specific gravity .9116; Solidifying point —24° C.; Refractive index (20° C.) 1.475; Iodine number 145.3–155.2; Saponification number 157.3–163.2.

2. The chemical composition of the fruit is as follows:

Moisture 5.30%; Ash 8.82%; Crude protein 25.07%; Crude fat 17.23%; Crude fiber 20.37%; Carbohydrate (by difference) 23.21% = 100.00%.

3. The fruit contains aluminum phosphate.

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PHARMACY IN THE DAYS OF THE PHARAOHS.*

BY CASWELL A. MAYO.

Our knowledge of medicine and pharmacy in Ancient Egypt is largely drawn from four papyri though there are five others which contain references to medicine and the practice of the healing art. But these five are mainly devoted to mystical incantations. The four which give us most of our knowledge of medicine in the days of the Pharaohs (1) are the "Berlin Medical Papyrus," a photostat of which is shown here,[1] and which covers 23 pages; (2) "The Ebers Papyrus," of 109 pages, a reproduction of which is shown here[1] through the courtesy of the Lloyd Library; (3) the "Edwin Smith Papyrus," of 22 pages, one page of which is shown,[1] and (4) the "Hearst Papyrus," owned by the University of California, which has been published with notations, this published form being shown.[1] This contains 18 pages.

From these we learn that in Egypt, as in most of the early civilizations, medicine was a part of the priestcraft. The Egyptians seem to have had a very good idea of the circulation of the blood, and of the function of the heart.

A great many of the drugs named are still in use, while others are known to us though their use has been discontinued. The preparations used were made up for each individual case, and were generally polypharmacal, containing anywhere from three to two dozen ingredients. Little or no attention seems to have been paid to appearance or palatability. Beer was much used as a vehicle.

Something like 150 drugs have been identified as having been used by the pharmacists of the Pharaohs, a list of which will be found in the "Handbuch der Pharmacognosie" by Tschirch, Vol. 1, part 11, page 463. This included absinthe,

* Abstract of paper presented before the Section on Historical Pharmacy, Buffalo meeting, 1924.

[1] Exhibited during the meeting of the Section.

aloes, acacia, anise, calamus, cannabis indica, cardamom, cassia, cumin, chicory, conium, coriander, galbanum, hyoscyamus, juniper, peppermint, myrrh, opium, castor oil, squill, styrax, thyme, triticum, cantharides, honey, wax and the excrement and entrails of various animals, and several insects.

PRESCRIPTION FROM PAPYRUS EBERS.

Written about 2,550 years before Christ.

The shaded letters are in red in the original prescription. The prescription reads from right to left. The column on the left gives the quantities.

The line in red across the top and the prescription have been translated as follows:

To cure the bowels which are diseased.

Cumin	1/64 drachm
Goose grease	1/8 drachm
Milk	1 tenat (0.6 liter)

Boil, pour out and drink.

The formulas appear in very much the same manner as they appear in modern formularies, the writing being indented on both sides. As a rule, the title of the formula, usually including the name of the disease to be treated, is in red, and the quantities of the article used are also in red.

In all the papyri mentioned the writing is of what is known as the hieratic or cursive form which is in effect a kind of shorthand of the hieroglyphic writing. The hieroglyphic writing consists of pictorial representations. The hieratic writing is not pictorial but uses arbitrary signs to represent the pictorial figures used in the hieroglyphics. As used in these manuscripts, the hieratic writing is the combination of the syllabic and ideistic writing, that is the ideas are sometimes conveyed as a whole, while in other cases the words are given in syllables. The writing is read right to left. It is interesting to note that one of the characters used to indicate a weight closely resembles the drachm sign now used in medicine, and it seems probable that this arbitrary sign has come down to us from Egyptian hieratic writing through the Greek, for it seems to have been used by the Greeks.

It is interesting to note that the "Edwin Smith Papyrus," the contents of which are even more purely scientific than that of any other, and the Hearst Papyrus are both in United States.

More details regarding the "Ebers Papyrus" are given in an article printed in the *Druggists' Circular* in March, 1888. For much of the information which I have used in the compilation of these remarks I am indebted to Baron Felix Von Oefele, who is one of the highest living authorities on medicine in ancient Egypt and many of whose reprints on various phases of the subject are shown herewith.

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Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

All articles recorded in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which is issued annually. Those desiring abstracts immediately can obtain them for a fee of one dollar each by communicating with A. G. DuMez, Hygienic Laboratory, U. S. P. H. S., 25th & E Sts., N. W., Washington, D. C.

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BUSINESS RESEARCH.*

An impressive fact that characterizes modern industrial invention is that it is the product of scientific research largely conducted by the related industries themselves.

In our own country the federal government, largely because of the pioneer work of the Bureau of Standards, is converting abstract scientific knowledge into applied industrial science with the coöperation of industry and in its behalf. Many of the services of the Bureau of Standards are for practical ends obvious even to the laymen. Thus they have worked with the Hotel Association in developing

* Parts of a press abstract of speech delivered at New York, May 26, before the Trade Association Executives, by Henry Bruere, *Third Vice-President* of the Metropolitan Life Insurance Company.

formula for unbreakable china that not too blatantly proclaims its virtue in this regard, and with laundrymen in devising fabrics that do not succumb to cleaning.

There is an impressive amount of technical industrial research. Less is being done in the important field of commercial research. Here again the federal government is taking a leading part, under the guidance of Secretary Hoover in the Department of Commerce. The simplification and standardization work accomplished by the Department in coöperation with trade associations is a first class contribution to sound business economics. There are, however, great undiscovered worlds of knowledge in the domain of management. It is not a serious strain on truth to say that there is more common knowledge regarding astronomical facts than there is regarding the methods and principles of business management.

Knowledge of the science of business, to continue the comparison with astronomy, is still in the astrological stage. We know that the velocity of light is 186,000 miles a second, an eight minutes' journey from here to the sun, and we know or we are authoritatively told that for the same ray of light to reach the nearest star would take four and one-half years. But with respect to the every-day processes of business management most of us are unaware and we can only learn by costly experiment. We have not formulated the knowledge that has been accumulated generation after generation and dies with those who possess it. We have not taken it out of our heads. The successful business man regards himself as an elastic versatile creature, able to meet all the varying conditions that confront his business, but if you ask him how he does it, he will answer merely that he exercises good judgment or confronts you with platitudes. As a matter of fact he is proceeding along rather clearly defined lines, so much so that "knowing the business" is a first requirement of any business man's formula for success.

It is a recent conception that business may coöperate to public advantage. The Sherman Law rests on the age-long suspicion of combinations since they were historically the means of strangling the consumer.

One of the most significant marks of commercial progress in recent times is the development of the conception of coöperation among members of a trade for the good of the community. In other words, we are beginning to see that our national trade and industrial equipment is a resource for the common good and that that good can best be served by accumulating knowledge regarding methods of performing the service to which trade and industry are dedicated. The trade association is performing an admirable function in this regard.

As soon as we definitely convince ourselves that business is a form of public service and that the community is as much entitled to the results of experience and investigation in the field of business administration as it is in the realms of science, we shall have a new public regard for business activity and a notable strengthening in the business structure now too subject to the devastations of ignorance of progress in what is less an art than a science.

Because business has been nearer our appetites than our sentiment, it has been slower to perceive the obligations that rested upon it, to achieve for itself the degree of freedom to progress the rough exchange of methods and experience which can only come when the public has been persuaded that coöperation between business men will result to the advantage of the public and employees, as well as to stockholders or individual owners.

THE ETHICS OF ADVERTISING.*

The notion that advertising in its broad sense is an economic waste has been long since abandoned. I have already mentioned its social use in advancing standards of living and its economic influence upon mass production and thus its contribution to lowered costs. More directly it is an economical form of distribution. The steady increase in volume of advertising in our news and periodical press is only one proof that it is such an economical form of distribution, for if it did not secure greater results at less expense it would decrease, not increase. The consumer, searching for article or service, turns to the advertising columns of our press to learn just where to go after it, and so avoids the waste motion and loss of time and strength involved in blind search for fulfillment of his desire. All these things eliminate waste motion and time.

But there are some economic wastes which can be eliminated by the advertising managers. One of these you are already attacking through your development of research activities. An advertising agency is a selling agency. The indispensable attribute of salesmanship is an understanding of the market. Competent salesmanship requires that its efforts be expended in territory and by methods which shall reach the maximum number of buyers at the minimum cost. It follows logically that sound market analysis must be an integral part of advertising salesmanship. All this requires hard, intensive, not superficial analysis. Research in these matters is like that in any other branch of economics. It takes time to develop experience and method. You have already gone a long way in this direction.

There is another economic waste through advertising which has given your organization great concern and is of the most profound concern to the public. I do not refer to the field of fraudulent representation, for that is simply porch climbing. What I do refer to is the advertising of articles which do not really contribute either to usefulness, comfort, or even luxury.

To attain a permanence in public confidence, to maintain a position as part of the economic machinery of the country, the advertising executive and the medium need to see to it that the desire they create is satisfied by the article they present. To establish the good will of the public toward producer of goods and service is not alone a necessity to success in advertising, it is also a necessity to the advertising executive and the advertising medium if advertising is to maintain its influence.

Great advancement has been made, so great in fact that while advertising at one time may have been looked upon as a nuisance and an intrusion for the beguiling of the credulous only, it has now come to take a place as commercial news and as an economical method of salesmanship. Its first step in progress was when the medium, recognizing its responsibility to the readers, exercised censorship over extravagant, distasteful, and misleading copy. This gave more credibility to truthful advertisements themselves. The next great step was your organized action of advertising managers, advertisers and advertising mediums through moral suasion, Vigilance Committees and Better Business Bureaus.

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* Part of the address of welcome by Secretary Hoover before the twenty-first Annual Convention of the Associated Advertising Clubs of the World at Houston, Texas, May 11, 1925.

It is not too much to say that from all the many inventions and the multitude of ideas that are poured forth daily in the preparation of advertising there is emerging a science and a profession. It is becoming a science in its search for method and a profession in its skill of management. I am told there are seven thousand students in our business educational institutions preparing for advertising as a career.

But the milestone which will mark the passage from a trade to a profession is the establishment of group ethics. It is upon this subject that I wish to lay some emphasis. The group characteristic of law and medicine and engineering is not alone the training of skill required, it is the elevated code of relations with fellowmen, the incorporation of responsibility to the community into the daily task, the insistence upon a high sense of service given, that marks their distinction. The use of the slogan "truth in advertising" and the vigilance agencies which you have set up to protect the consumer are themselves the finest of proof that this business is evolving toward highly ethical standards.

Advertising unfortunately still has to contend with some residue of unethical practices and with accumulated prejudices which arise from the methods of many years ago. But in the organizations which you have set up, the principles which you have advocated, the practical steps which you have undertaken, we are seeing a new day in the ethics of advertising itself. And just so far as those ethical principles are embodied in practice, just that far will the public grow in confidence in advertising and just that far have you progressed into a profession.

Now all this description and comment upon the work of your profession raises for me another picture in which we can take great pride. Through the discussion and advocacy of standards of conduct and ethics your organization and your sessions are taking part in the upbuilding of a new and growing sense of responsibility and self-government in our economic life and in the community at large.

Self-government comprises more than political institutions. It is more than municipal governments and state governments, legislatures and commissions. No doubt real self-government starts in every individual, that he control his own moral and intellectual contacts with his fellowmen in common interest. But beyond this the growing complexity of our modern life requires that if self-government is to be a success there must be self-government among groups. There are many problems of restraint of abuse that can be solved by agreement among groups instead of by law. Our numbers have become so great that we elbow each other in all directions. When we had only seven people in a county instead of seven millions we did not step on others' rights so much—nor did we have such a field for advertising.

We are confronted with the daily demand to extend government in order to cure some abuse or other. The arm of government is a poor cure for abuse, for it becomes at once a restraint of liberty. For the arm of government cannot operate even to restrain evil without bringing about some instance of oppression. The safeguard against the invasion of government into the lives and liberties of our people is that we shall cure abuse outside the government. Such associations as yours, in the erection of ideals of a profession, in the determination of methods and definitions of standards for the elimination of abuse, is self-government, and it is

self-government in the greatest form of which democracy has yet given conception—that is self-government outside of government.

The war drove us to great centralization of government and to great dependence upon the action of central government. The continuance of this mobilization of all effort would have destroyed the initiative of our people and destroyed the very impulses to progress. But from it came the illusion that most human ills could be cured by governmental regulation. It has been hard to get back because everybody knows of some ill in the other fellow's business that ought to be cured right away. We need to have the public mind turned off of the national government as the remedy for all ills. We need to get Washington off of the front page at least part of the time. If we can decentralize thought onto state and municipal government, and above all to such efforts as yours to cure abuses from within, we shall automatically stop the growth of federal encroachment.

National character cannot be built by law. It is the sum of the moral fiber of its individuals. When evils which rise from our growing system are cured by live individual conscience, by initiative in the creation of voluntary standards, then is the growth of moral perception fertilized in every individual character.

The test of our whole economic and social system is its capacity to cure its own abuses. New wrongs and new relationships to the public interest will occur as long as we continue in scientific discovery and as long as we continue to progress. If we are to be wholly dependent upon Government to cure these abuses we shall by this very method have created an enlarged and deadening abuse through the extension of bureaucracy and the clumsy and incapable handling of delicate moral and economic forces.

American business needs a lifting purpose greater than the struggle of materialism. Nor can it lie in some evanescent, emotional, dramatic crusade. It lies in the higher pitch of economic life, in a finer regard for the rights of others, a stronger devotion to obligations of citizenship that will assure an improved leadership in every community and in the nation. It lies in the organization of the forces of our economic life so that we may strengthen the home and may produce happier individual life, more secure in employment and comfort, wider in the possibilities of enjoyment of nature, larger in its opportunities of intellectual life. The ferment of organization for more definite accomplishment of these things in the practical day-to-day progress of business is alive in our business world.

The Government can best contribute through stimulation of coöperation with voluntary forces in our national life; for we thus preserve the foundations upon which we have progressed so far—the initiative of our people. With vision and devotion these voluntary forces can accomplish more for America than any spread of the hand of Government. Your association is contributing to these ends.

COÖPERATION AMONG SCIENTIFIC MEN.*

I. Science is a benefactor of humanity, but, unfortunately, so far, the world does not "stir itself to make it possible for its benefactors to live and work." This makes necessary organized voluntary coöperation among intellectual workers.

* Parts of a paper by Dr. Walter P. Taylor, United States Department of Agriculture, in *Scientific Monthly*, April, 1925. Permission granted to reprint.

Science has done much to better the lot of mankind. It has helped to eliminate disease, superstition and ignorance. Its beneficent services underlie and maintain the complicated structure of modern civilized society. It has remained for science, through innumerable contributions to production, transportation and communication, to make of the world a unit, such that democracy and world brotherhood, formerly the dreams of far-sighted men of prophetic insight, have for the first time in history become actual possibilities. Scientific men and intellectual workers generally, to whom these advances are due, should be recognized as among the most valued servants of society, and, as a matter of course, provided with the economic essentials to good work. Unfortunately, however, the public has no clear appreciation of the fundamentally important rôle played by the intellectual worker, and, as a consequence, makes very little effort properly to support his work.

(1) The intellectual worker should realize that he, himself, as well as the public, has a definite responsibility for the conditions under which he works. * * *

(2) One essential to effective coöperation among scientific men is the definite abandonment of ultra-individualism, and its replacement by group loyalty, sympathy and mutual helpfulness.

The work of the scientist has always been on a lofty ethical basis, though founded almost altogether on an individualistic philosophy. The ethics of cooperation are higher and considerably more difficult of successful attainment than the ethics of individualism, but they promise far more for the future.

Close attention to one's specialty with little thought of the other fellow is the line of least resistance for the intellectual worker. Ultra-individualism, like ultra-nationalism, once the "flame upon the altar," is now likely to be "a devastating scourge."

On the other hand, compulsory coöperation, effected through a disciplinary organization of scientific work and workers such as Elihu Root appeared to have in mind a few years ago in connection with the organization of the National Research Council, could not possibly be effective or successful in the long run. Such pseudo-coöperation would, in my opinion, work greater havoc than a rampant individualism. In order to be helpful, coöperation must come from within the ranks, and must be a very liberal affair, allowing for the widest differences of opinion and interpretation, and acting rather as a stimulus than as a damper on individual initiative.

In commenting on certain policies of farmers' coöperatives, a writer in Wallace's *Farmer* (February 8, 1924) calls attention to the necessity for remembering that these practices are means rather than ends. "The end we are striving for," he says, "and that coöperative organization seems most likely to bring about, is the creation of a rural civilization that will offer the greatest opportunities for the freest development of the human spirit." Similarly, what intellectual workers are striving for, and what voluntary organized coöperation seems most likely to bring about, is the creation of an educational atmosphere that will offer the greatest opportunities for the freest development of the human spirit.

When I refer to group loyalty, I do not necessarily limit the concept to one particular group; but it ought to be realized that the pervasiveness and purity of group loyalty, sympathy and mutual aid among intellectual workers may be taken

as an earnest of the possibility of their expanding these great conceptions to embrace all humanity.

(3) Definite organization for the economic as well as the scientific advancement of intellectual workers will naturally follow the development among them of the coöperative spirit. * * *

II. Organized coöperation will make science more efficient.

(1) Experience in the worlds of business, labor and agriculture demonstrates the economic advantages of organized coöperation.

There are few who would deny that organizations of business men, manual workers and farmers have been economically advantageous to the groups represented. It is increasingly evident, also, that proper organization affords a medium for the maintenance of higher standards of service to society on the part of these groups, respectively. * * *

Science having made democracy something more than a dream of the prophets, scientific men and intellectual workers have a prime responsibility to help make it workable and effective. The results of science must be taken to the people and the distribution of these results must be put on a fair basis. All science, both pure and applied, should be for use by mankind. As J. C. Merriam once wrote (*Science*, November 19, 1920, p. 476), "Research should lead to construction and is not complete unless the results are available for general use." In theory most of us agree with this principle, but in practice we fall short of realizing it. Over-absorption in a specialty is not only one of the principal reasons why the individual scientist is exploited on every hand, but it also lessens his contacts with public problems for the proper solution of which his work is essential. As Branner has well said (*Science*, May 4, 1917, p. 418), "Our presidents, governors, judges, mayors and others in public life need the services of men of science." Geddes (*California Alumni Monthly*, 1922) has called attention to the fact that while every country has had a great number of lawyers in its government, one must seek far to find the country in which the best medical minds, the best engineering minds, the best scientific minds, are taking part in the national government, directly as responsible legislators and cabinet officers. The matter of health, he says, is purely a question of good government. The same may almost be said of questions of economic adequacy and of such problems as war, poverty and crime. "We will never," says Geddes, "get really satisfactory governing bodies until we have got the best thought in each of the great scientific lines of thought represented effectively in them. We must arouse the scientific and well-instructed men out of their absorption in teaching, in the work of a profession, and interest them in government." These remarks of Geddes imply a very lofty and difficult conception of the duty of the intellectual worker, and demand from him a willingness to coöperate with the community which I fear few of us possess at present. It is perfectly certain, however, that in addition to our very proper present-day ideals of whole-hearted devotion to our specialties we must assume a new ideal of professional and community coöperation. I suspect our hardest task will be, not in awakening the public to the need for more liberal support of scientific work, but in educating ourselves to work and strive together, to be coöperators instead of competitors.

SCIENTIFIC THERAPY AND PHARMACEUTIC RESEARCH.*

MORRIS FISHBEIN, M.D.[1]

The growth of scientific therapeutics is as romantic a series of tales as ever captured the attention of a novelist; it is filled with dramatic incident. What could be more dramatic than the struggle of Paul Ehrlich until his success was crowned by the discovery of arsphenamin? What great climax in human life ever approached the scene in which Pasteur demonstrated to the doubters of France that the sheep that had been inoculated lived and those that had not had preventive injections against anthrax died? Were ever human sympathies more touched than by the story of the fight to get antitoxin into stricken Nome? And equally dramatic, though perhaps more tragic, is the story of the discoverer whose new preparation seems to him to be a marvelous specific, but who passes at last, after several years of trial, into the oblivion that is the fate of those who fail. It may be true that the romance of medicine, and especially the history of materia medica, will show many more failures than successes. Within our own memories are the hundreds of cures for tuberculosis, for cancer, for locomotor ataxia and for general paralysis that are now buried beneath tons of soil with victims that they were to cure and, in some cases, with the dollars of the manufacturers who thought they would cure. But above them rise the monuments to diphtheria antitoxin, to arsphenamin, to quinine, to digitalis, to ether, to the local anesthetics, to morphine and to the many other remedies that have alleviated pain and illness and postponed death.

THERAPEUTIC NIHILISM.

In writing the history of our progress in scientific therapeutics, we like to believe that a proper attitude toward the claims made for remedies began to develop with the beginning of the twentieth century. Indeed, a study of the origin of the phrase "therapeutic nihilism" would probably show the beginning of its vogue at about that time. But therapeutic nihilism is not the property of any recent or single period in our history. There were the high priests of Israel, who doubted the healing virtues of the golden calf; there were the biting aphorisms of Celsus, who questioned what he could not see; there were even the experiments of Albrecht von Haller, who anticipated Hahnemann in the desire to test drugs to see what they would do before admitting that they would do anything. In fact, the nihilism of our contemporary period is not an attempt to destroy belief in the value of drugs, but an attack on an outrageous commercialism in the sale of therapeutic substances, which unfortunately, perhaps, serves also to undermine to some extent belief in all drug therapy. It seems likely, rather, that the growth of therapeutic nihilism in general was the result of the great advance in our knowledge of the causes and pathology of disease and the increasing attention paid to these matters rather than to treatment, in our medical schools. It has been said that medicine as an art of healing the sick has given place to medicine as the scientific study of disease.

To-day the trend of opinion is turning against therapeutic nihilism; there is a

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* Address before the American Drug Manufacturers' Association, New York, April 23, 1925. Reprinted from *Journal A. M. A.*, May 16, 1925. Permission granted to reprint.

[1] Editor, *The Journal of the American Medical Association.*

call for the return of that older type of physician in family practice whose primary function was the alleviation of pain and the healing of illness. And that newer trend is the result not only of a changing philosophy as to the functions of the physician but equally to that very scientific study which, for a few decades, caused some to doubt the virtues of their remedies.

In the materia medica of fifty years ago, drugs were classified by certain definite effects which they produce on the system of the human body: stimulants, depressants, cathartics, diuretics, sudorifics, germicides and parasiticides. Finally, there were the alteratives, which presumably produced certain effects, but just how or why no one knew. The therapy of to-day includes such of these alleviators of pain and these modifiers of the physiology of the body as scientific pharmacology has shown to have real merit. But it also attacks disease by providing substances that produce the death of the specific organisms responsible for disease, by activating the tissues of the body to fight disease and by providing substances that fill functions in which the tissues are apparently deficient.

THE VIS MEDICATRIX NATURÆ.

There seems to be inherent within the cells of all living substances a "will to live," a tendency toward recovery from disease, the *vis medicatrix naturæ*. This salutary activity of the organism is the secret of the success of those cults that occupy the twilight zone of medical practice. "The vis medicatrix," says Sainsbury, "has floated many a false system of medicine, including some very heavy craft: *it* has cured, *they* have claimed." On the *vis medicatrix* are based the alleged successes of such cults as chiropractic and Christian science, of theosophy, of Couéism, of zonetherapy and, indeed, of every cult that is essentially a system of treatment based on a single idea as to the causation of disease without relation to the proved facts of medical science. These cults, known as the nonmedical, or drugless, cults, have delayed scientific progress through their attacks on scientific experimentation, particularly on that which involves the use of animals, and unquestionably have been responsible for the spread of epidemics and for a certain proportion of mortality from disease. Granted that there are instances in which the wrong use of drugs may have hastened death, there unquestionably are many more instances in which the lack of the medicament—the failure to apply the remedies of science—has resulted in anguish to the sufferer and in the spread of disease.

It must not be thought, however, that medicine has been sinless in its consideration of this special property of the living cell. Until the science of biometry taught us something about the evaluation of clinical statistical evidence, we were far too ready to give ourselves the credit for that certain percentage of cases of disease that recover not only without treatment but frequently in spite of treatment. The patient is given a remedy and improves. The clinician considers that the patient improves, not through the *vis medicatrix naturæ*—the snare that easily deludes the cultist but should not entrap the scientist—but because he has been given the remedy. If scientific medicine had not recognized this difficulty over many years, the saying "post hoc ergo propter hoc" would not have become a proverbial sneer at the conclusions of clinical medicine.

EVALUATING CLINICAL EVIDENCE.

Edwin Bramwell, professor of clinical medicine in the University of Edinburgh, recently remarked succinctly that "the ultimate proof of the value of any remedy can only be established at the bedside. * * * Hypothetical considerations and the results obtained by laboratory workers are invaluable," he says, "because of the possibilities and indications they suggest, but the clinician is responsible for the final evidence." This is a statement which is invariably greeted with applause by those whose proposed remedies have met with disaster when submitted to the scientific experimentation of the pharmacologist in the laboratory. And their applause no doubt is based on the fact that they have on hand hundreds of letters from so-called clinicians to prove that the remedy which the pharmacologist found unscientific and unreliable has met in their hands with remarkable success. Nothing is so difficult to evaluate as clinical evidence. Sir William Osler wrote: "It is so much easier to believe than to doubt, for doubt connotes thinking and the expenditure of energy and often the disruption of the status quo. * * * In the matter of treatment, the placid faith of the believer, not the fighting faith of the aggressive doubter, has ever been our besetting sin." Nevertheless, as Dr. N. V. Dale of the British Medical Research Council has asserted, the intelligent use of a drug does not mean that the practitioner must have a full scientific appreciation of the mode of the drug's action. Who knows to-day the manner of action even of quinine, a remedy established by centuries of clinical use? Who has even an inkling of the processes involved in Roentgen ray and radium therapy? Who can even approximate the facts regarding the activity of the vitamin? Since all of these substances are without doubt potent, who would say that the use of such substances should be avoided until the complete explanation becomes available? No. Scientific medicine does not ask proofs of this character. It does ask that the use of the remedies be established within the limits of the science of pharmacology and that the clinical evidence be so controlled as to meet the ordinary tests applied to so-called scientific evidence.

The pharmacologist considers first the composition of the remedy and the established knowledge of the past as to its various components. He then attempts by experiments on animals, under controlled conditions, to determine its effects. Having satisfied himself by animal experimentation that the remedy has definite virtues, and that it is harmless in the quantities used, he turns to it the alleviation and control of disease in man. Now this matter of possible harm to the patient from an unestablished remedy is a most important one. The time honored aphorism "Primum non nocere" expresses in three Latin words the caution to the physician "First do no harm."

There was a time when our therapy was dominated by faith, by incantations, by charm, and by symbolism. In the dark ages of medicine, the words that went with the concoctions of dried beetles, snake oil, mandrake root and herbs brewed in the light of the moon at midnight were considered quite as important as the remedies themselves. From this we passed into the age of the "dreck apotheke," with its combinations of all the noxious excretions and secretions known to man. Against this, Hahnemann reacted, and no doubt the homeopath with his dilutions of drugs to the two millionth part did less harm than Rush's thunderbolt with its massive doses of calomel and jalap. True, William Withering had established

digitalis, Jenner had established smallpox vaccination, mercury had been found for syphilis—a true science of pharmacology was beginning to win its way. A Lister showed the importance of antisepsis and the possible harmfulness of too rigid antisepsis was replaced through the discoveries of Pasteur, by a safe and satisfactory asepsis. And so at last we came to the new era of therapy introduced by Paul Ehrlich, the era of specific chemotherapy.

In this transition over the centuries, the position of the physician in relation to his patient changed also. Look at the pictures drawn by famous artists. Here is the doctor of Luke Fildes' famous picture; he sits at the bedside of the child dying of diphtheria. Possibly he will decide a little later to do a tracheotomy, to try to suck out the membrane or to prescribe a little tincture of iron. He, too, is, after all, doing no harm. But if the pictures were of our day he would be doing a great deal of harm by his inactivity. He ought to be taking a throat culture to confirm his diagnosis of diphtheria, and he ought to be injecting diphtheria antitoxin and possibly he ought to be putting in his spare time by immunizing the other members of the family who should not be in the room anyway. Our aphorism "Primum non nocere" means, therefore, "do no harm by withholding a proper remedy." Let us assume, for example, that one withholds atropine in an inflammation of the eye, and thereby permits permanent scarring and loss of eyesight. Here the one responsible for treatment does as much harm as he would have done if he had given a wrong drug. There is a need for "positive treatment" which means the employment at the earliest possible moment of those remedies which have been established as beneficial in the condition concerned.

SPECIFIC THERAPY AND CHEMOTHERAPY.

If ever the warning "Primum non nocere" were needed in medical science, it is needed in the judgment of the new and potent remedies which science has developed for the treatment of disease. We know that insulin acts, because it can act for harm as well as for good, and this applies as well to arsphenamin, to antitoxins for scarlet fever and diphtheria, to our sedatives, and to our dye substances. These preparations must eliminate the invading organisms but must not harm the patient. We have had presented to us a long series of numbered combinations of metals with organic radicals, of metallic substances with dyes, and similar preparations. Such terms as "606," "909," "Bayer 205," "Fourneau 309," and "Mercurochrome 220," representing hundreds of trials before the achieving of even possible success, have become familiar to most physicians. In the case of some of these remedies, we find that they not only kill the bacterial organisms for which they are presumed to be specific without harming the body of the patient, but also, apparrently, render the body in which they are injected resistant to other infections. In many cases, the serums and extracts of the organs of such animals also exert curative effects. As can be demonstrated in the test-tube, the drugs themselves do not have the power to destroy the organisms, but when these drugs are taken, or injected, into the body and combine with the blood and the tissues, some change takes place which results in destruction of the parasite. There are preparations of bismuth which will not act when used alone, but which become exceedingly potent when mixed with extract of liver tissue. Here the tissues are the activating factor. Dale has observed that an amebic infection which readily yielded to

emetin in man could not be so controlled when transferred to the cat. Something in the tissues of man that activated the emetin was absent in the tissues of the cat. Here, then, is that vis medicatrix naturæ, that power within the body which may itself come forth some day in the form of a hormone, or a vitamin, or an endocrine substance, or what not. And if it does, some manufacturer who follows the Council on Pharmacy and Chemistry will give it a new name that correctly labels its composition, and that is just as hard to pronounce as *vis medicatrix naturæ*.

In studying the power of the body to resist and overcome disease, the impression has become firmly established that much depends on the cells being in a normal healthful state. It is known that this condition of the cell may be modified by foreign substances injected into the body such as non-specific proteins; that certain poisons definitely inhibit the actions of certain cells; that substances such as insulin activate certain cells to perform unusual functions. Every great discovery in medical science is followed promptly by a series of investigations along similar lines, and only too often reasoning by analogy leads to therapeutic abuses or still more likely to therapeutic fads. The discovery of a substance like thyroxin or insulin is the warrant for the entire gamut of glandular organic extracts, singly, in mixed powders and in glandular soups. And there is as much reason for the use of some of them as there is for the belief that a kidney stew will cure interstitial nephritis. The proof that intravenous injection of one remedy will yield a positive and swift result is taken as warrant for a whole battery of self-loading, rapid firing syringes with ammunition wagons full of ampuls in reserve. It is suggested that the secret lies in the use of colloidal substances, although so far no actual knowledge is available to support the use of colloidal substances. And while we know that the vitamins do something because certain things happen when they are absent from our diet, we know little as to what might happen when any considerable amount of such substance becomes an exceedingly large part of our diet. We know that suggestion may play a large part in what we do and in what we think about what we do, in what we feel and in what we think about what we feel; and if we are Freudistically inclined, the less we think about it the better.

THERAPEUTIC ACCURACY.

It would seem, then, that the prime need in therapeutics as a science is the need of all sciences, namely, accurate methods of measuring results and of evaluating effects. The lack of such methods obviously has resulted in marked differences of opinion between those who have the "will to believe" and those who demand to be shown. Consider in this connection the hypnotics and sedatives. If there were some method of measuring the value of such preparations similar to the methods that exist for determining the potency of preparations of digitalis, of parasiticides, or of antitoxins, there would be no question as to the relative merits of the hundreds of preparations of this character that are available and that are being made available to the medical profession. Instead, the only scientific methods that have been elaborated for properly testing such preparations involve the interpretation of subjective phenomena with no exactitude, and the use of animal behavior tests that have little or no application to the problems of controlling pain in the human being. As a result, the clinician is besieged with the claims for hundreds of substances the names of which end in "al," including medinal, luminal,

dional, barbital and neonal. So far as the various members of the barbital series are concerned, there would appear to be practically no limit to the preparations and combinations that might be derived from barbituric acid. Very likely there is a vast difference in power of action, in toxicity, in by-effects and in other particulars between the worst and the best of the series. But obviously there is a score of substances near the top of the series, therapeutically, that differ from each other but slightly; and there is to-day no method known to medical science for determining the exact scope of that difference. Such being the case, no body of scientific men, such as the Council on Pharmacy and Chemistry, will be able to permit unwarranted distinction between such products, and it certainly must hesitate to lend its warrant to the exploitation of any considerable number of such preparations with individual names that completely hide the source of their derivation.

THE CLAIMS FOR PHARMACEUTICAL PRODUCTS.

The manufacturer may well raise the question as to the extent to which purely scientific considerations may limit the number of products that are sold. Any one who has watched the development of the catalogs of various proprietary manufacturing houses knows that each organization wants to have in its list substances to meet the various indications that may arise in the practice of a physician. It even has been intimated that some firms have copied the catalogs of others. Every manufacturer wants a laxative like phenolphthalein, a sedative of the barbital series, an antiseptic similar to compound solution of cresol or to surgical solution of chlorinated soda; he wants a digitalis preparation, a tonic preparation containing iron, a bismuth preparation to be used in syphilis; an agar and oil preparation, an oil that is all his own, and so on down the list. He wants, in short, to be able to provide his representatives with a complete line, and no scientific physician will deprecate this wholly estimable desire on the part of the manufacturer. If a manufacturer has created a name for his organization that stands for reliable pharmaceuticals prepared in convenient packages, it is well that physicians recognize the worth of such a reputation and that they depend on such a manufacturer for their drug products. Apparently, however, manufacturers are not willing to sell the name of the firm alone. Furthermore, there are many corporations which deal not in complete lines, but only in specialties. Obviously, the man who is selling a specialty feels that he must make claims that will convey to the physician the idea that for its purpose the specialty is far superior to the product issued as a part of the line of other manufacturers.

Notice, for example, the preposterous extent to which this tendency was carried in connection with the sale of preparations of liquid petrolatum—so-called Russian or mineral oil. Obviously, every manufacturer could find a preparation of mineral oil that would vary in its specific gravity, in its transparency or in some other minor manner from the preparation prepared by some other refiner. But when the clinical test is applied, and, indeed, when clear light of pure reason is applied to the extraordinary claims made for such preparations, they are found in most cases to be even thinner than water. In the development of this specialty, the attempt seems to have been to find, first, some non-essential quality that would support the claims, second, an attractive name, and third, some physicians credu-

lous enough to believe the claims and to support them with evidence. Certainly, oil, both internally and in the well, has much to answer for.

THE SCIENTIFIC INVESTIGATOR OF COMMERCE.

The statements just made should not be taken in any way as a depreciation of the work of the commercial chemist and pharmaceutical investigator. I am not one who believes that it is impossible for the scientist in the employ of a large corporation to produce investigations that are on a par with the best type of investigation done in university laboratories. After all, the commercial chemist and pharmaceutist is merely the scientist of the university transported to a new environment and compelled to give thought to practical considerations that do not, perhaps, disturb him when within the cold walls of some sanctum of learning. But it is unreasonable to believe that an honest man must be dishonest in any circumstance. After all, honesty is a state of mind not the particular property of any chosen group. It is a pessimistic man indeed who believes that outside the walls of universities there exist no scientists who are not corruptible. The debt of the public to the investigators of commerce is no slight one. The research investigator in his laboratory is able to produce some new medicament like insulin or scarlet fever antitoxin or thyroxin on a scale that enables him to treat a few patients at a considerable cost. The investigator in commerce substitutes production in tons for production in grains and thereby makes available to the poorest invalid the life-saving remedy that might otherwise be given only to the wealthy few. The process that produces the remedy in the individual laboratory is, as we all know, not immediately adaptable to quantity production. The isolation of the active product is only an indication of the problems that must be surmounted for commercial distribution. Here such matters as the mass of raw material, preservation, and convenience of dispensing must be considered. Indeed, it has been found occasionally that the method by which a product was evolved in the laboratory would not even yield a similar substance when applied on a large scale for commercial purposes, so that entirely new methods had to be devised before the product could be made available to the public. And these methods are worked out by men whose names remain hidden forever in the secrecy of the commercial world, whose names do not appear in the periodicals of scientific research, but whose contribution is, perhaps, just as great and just as important in the long run as that of the investigator who first brings the substance to medical attention.

THE OUTLOOK FOR THE FUTURE.

As one looks over the accomplishments of the past, one need feel no pessimism regarding the future of scientific medical therapeutics. Such harm as is not inherent in human nature itself is slowly but surely being eliminated from the manufacture, the sale and the use of our remedies. More and more we are beginning to realize that the prime function of the physician is not the prevention of death, for death can never be prevented completely, and ultimately the mortality will always be one hundred per cent; not the raising from the dead of tissues or of human beings that have succumbed, for outside of biblical legend and the phantasies of those who claim there is no disease and who heal by the mind alone or by the laying on of hands, there is no raising from the dead—rather, the function

of the physician is to range himself on the side of life, by seeking to establish those conditions which are most favorable to life. These conditions he establishes through the employment of all those agencies which, scientific experiment has taught him, have the power to modify the actions of human tissues. These agencies include not only the drugs and biologic preparations of materia medica but also heat, cold, massage, electricity, water, sunlight and the mental suggestion of our therapeutics. With these agencies he aids the power within the body to overcome disease or he so modifies the constitutions and environment of the bacterial organisms that attack mankind, that they depart either their lives or his system.

The outlook for the future in the control of disease depends, therefore first, on the acquiring of more knowledge as to the biology and physiology of man, and particularly of the individual cells within the body of man; and second, on a study of the natural history of disease, including particularly the biology, physiology and chemistry of the bacterial organisms that produce disease.

The finding of dye substances that are specific for certain bacteria, of antitoxins specific for certain diseases, of glandular extracts that replace missing secretions and activate latent cells to action; of substances such as the phthaleins that search out certain tissues like the liver or the kidney, or that carry antiseptic actions to certain secretions, as in the case of methenamine or hexylresorcinol—these are refinements of therapeutic science that are as astounding as the radio and the wireless telegraph.

In his "Principia Therapeutica," which is to the practitioner a sort of guidebook through the Hades of therapeutic fallacies, Sainsbury opens with a dialog between "Therapeutics" and "Pathology." The scene is the postmortem room and the pathologist is busily engaged in examining a dead body. With the typical cynicism of the pathologist—the analytic philosopher who renders the final materialistic verdict—this necropsist begins by wondering at the faith of the physician in his drugs. Digitalis, strophanthus and spartein had been given; yet the aortic valve was narrowed, and the valves were fused and thickened. "Did you think to soften them?" asks the pathologist. The fibers of the heart muscle were streched and degenerated. "Did you propose to make new fibers to overcome the destruction?" asks the pathologist. Fortunately, the physician is able to make a most convincing answer. "My attention took note of this only," he says, "that the heart did beat, and the circulation of the blood was maintained, however imperfectly. This rhythmic contraction of the muscle fiber had no sort of relation to those elements of degeneration within its substances—they were of death, but this was a living act, maintained in spite of all and every adverse circumstance, and to aid and abet this vital residuum, setting aside all thought of the elements of degeneration, mere mortal remains fit only for interment—this was my one endeavor."

This service to the living, this utilization of every potency and of every atom of scientific knowledge available to aid the power within the human body in its fight against death, commands all that the physician has to give of his learning and of his spirit. Behind him stand those who are charged with the preparation of the remedies that he is to use; and between him and them, those who would help him in his hour of need to select wisely. It has been our hope that this intermediate group, represented by the scientific pharmacologists, the teachers of therapeutics, the bacteriologists, the medical writers and journalists and the Council on Pharmacy

and Chemistry, might work more closely with those who prepare our remedies so that the physician might feel safe in every instance in trusting the preparations and the statements made about the preparations of at least a considerable number of manufacturers. With such coöperation we may approach nearer and nearer to that time when the rebuke of Paracelsus to the faint hearted physician may be warranted in fullest measure.—Translated: "Never must the physician say, the disease is incurable. By that admission he denies God, our Creator; he doubts Nature with her profuseness of hidden powers and mysteries."

COMMONWEALTH STUDY OF PHARMACY.

This is the seventh of a series of monthly statements issued by the staff conducting this study.

Since the study as now being conducted revolves largely around the filling of prescriptions it may be interesting to know what is being done on the subject of compounding.

There is a general feeling that prescription filling to-day consists very largely of a simple process of transferring from one container to another and that the ingredients of such prescriptions are largely proprietaries. If this were true, the pharmacist would need to know more about proprietaries, and the necessary knowledge of compounding problems would be reduced. Among other studies relating to compounding were the following:

1. At the outset in order to determine whether the study should be confined to official ingredients in prescriptions we studied 1000 prescriptions selecting at random 100 prescriptions from ten states. Following are the results:

(*a*) 51.9% contained only official ingredients
(*b*) 29.0% contained both official and non-official
(*c*) 19.1% contained only non-official ingredients.

2. For the same reason as above stated a second study of 1000 prescriptions was made showing the following results:

(*a*) total number of ingredients—2680
(*b*) of these 81.4% were official, 18.6% non-official.

NOTE: Non-official—anything not U. S. P. or N. F., including proprietaries.

3. The ingredients of 17,577 prescriptions were tabulated as the study progressed and the results while varying slightly from the study of only 1000 prescriptions made earlier are even more striking. Of the 40,454 items in these 17,577 prescriptions

77.8% were U. S. P.
5.4 were N. F.
6.8 were non-official, but not proprietaries
10.0 were proprietaries.

4. When the tabulation of types of ingredients in the 17,577 prescriptions had been completed it was noted that a number of classes of galenicals such as Emulsions, Suppositories, Ointments, etc., appeared very seldom. The component parts of these classes appeared but were tabulated separately. It therefore

became necessary to make another study of the prescriptions to determine just how many times the pharmacist actually was called upon to compound galenicals as mentioned above. A study was made of 10,000 prescriptions taken from the 17,577 previously studied with the following results:

Of the 6384 liquid prescriptions, 20.6% required only the filling of one bottle from another; 79.4% were mixtures that called for some skill.

Of the 1170 capsules (all kinds), 3.8 were proprietaries and would be bought while 92.6 should have been filled by the pharmacist.

Of the 881 powders, 4.2% were proprietaries while 95.8 should have been prepared by the pharmacist.

Of the 679 ointments 14% were proprietaries and 86% should have been made by the pharmacist.

* Of the 481 tablets all would be purchased. The same was true of the 149 tablets triturates.

* Of the 144 pills 54.8 would be purchased, and 45.2% should be made by the pharmacist.

* Of the 76 suppositories 31% would be purchased and 69% could be made by the pharmacist.

There were 22 prescriptions for Konseals, 4 for Cataplasma and 1 for a tube of tooth paste, all of which the pharmacist would make. There were 5 prescriptions for troches and 2 for ampuls which would be purchased.

From the above it is apparent that compounding is not a lost art. The filling of prescriptions is not, as many now believe, largely a matter of transferring a proprietary or secret formula preparation from one container to another.

The information and skill necessary to do the compounding involved in these prescriptions is being worked out by Prof. Louis Saalbach of the Pittsburgh College of Pharmacy and will appear in the final report.

THE EXAMINATION OF CHARRED DOCUMENTS.

BY C. AINSWORTH MITCHELL.

Various methods of deciphering charred documents have been studied, and an effective process of development by calcination has been devised. This also affords a means of distinguishing between certain kinds of printing-inks, typing-inks, and colored pigments, and even, in some cases, of determining the sequence of the strokes in writing. The relative value of thorium, cerium, and aluminium salts for strengthening charred fragments before calcination has been ascertained. Thiocyanic-acid vapor has been found a useful reagent for developing illegible writing in irongall-ink on charred paper; its sensitiveness as a test for iron has been determined. The photographic method of deciphering burned documents has also been examined, and has been found to have only a very limited applicability. *Journal* and *Pharmacist.*

CONVICTIONS UNDER THE ANTI-NARCOTIC LAW.

Recent convictions under the anti-narcotic law are encouraging, at least one of the means for stopping the illegitimate sale of narcotics is to assess fines and to enforce them. Prison sentences are more effective than money fines. In Philadelphia recently, Judge John J. Monaghan sentenced two men found guilty of possessing and selling narcotics to serve five years and eleven months in prison. The Judge said that he proposed, by the imposition of severe sentences, to keep the city clear of narcotic traffic. Judge Henninger also passed sentence on another convicted of the same offence, of two years in prison and a fine of $1000.

* With the proper facilities part of those marked with a * might have been made.

A REVIEW OF THE PRINCIPAL EVENTS IN AMERICAN MEDICINE.*

BY JOHN URI LLOYD.

(*Continued from June Issue, p. 535.*)

PART III.

THE BEGINNING OF ECLECTIC INFLUENCE IN AMERICAN DOMESTIC MEDICINE.*

In all directions, the art of specializing seems dependent upon earlier, conglomerates of far separated processes. Chance discoveries of primitive investigators, in whatever field, being put on record, afterwards afford discriminative students in widely separated fields, studying from different view-points rare opportunities for individualism and classification. Thus such wandering empiricists, as Dr. Peter Smith, the "Indian Doctor," introduced to both the medical profession and to the laity, American botanical products before unknown, and also, himself as an observing explorer, who concerned himself in problems seemingly afar from domestic medicine. Better schooled, contemporary observers that followed, for example the Bartons, Samuel Smith, Historian of the Province of New Jersey, Rev. Manasseh Cutler, the botanist from Massachusetts, founder of Chillicothe, Ohio, and others of the early day, alike were searchers in the mineral, animal and vegetable wealth of the new world. In their homely way they recorded also the results of their investigations and observations. Widely separated were they in their locations, and personalities, strangely antagonistic, even combative, were they in many of their views, but yet close-linked in general efforts, ideals and processes.

Comes in this class to mind, the name of that remarkable man, C. S. Rafinesque, who was not merely a scientific man, a University scholar and professor, but a friendly observer and even a companion of the illiterate red man. As did the empirical, home-bred physician, he affiliated with and studied the processes and remedial agents of whoever took an interest in nature or medicine, be it the aborigine or the mother who made her home remedies and domestic teas, and thus introduced to her family the Indian cures of the American wild man.

Appointed in 1817 to the chair of botany in Transylvania University, Lexington, Kentucky, his field was cosmopolitan, embracing not only botany, but history, ichthyology, geology, and science generally. His "Medical Flora, etc., of the United States," issued in two volumes 1828 and 1830, was practically the first systematic work embracing botany and medicine issued to and from the Middle West. This eccentric enthusiast spent much time in studying medicines of the primitive peoples of the South, the Choctaws, the Chickasaws and the Cherokees, as well as tribes living north of the Ohio River. His study of their methods, their remedies and their habits, was distasteful to many of his systematically schooled associates, but yet these researches gave him a fund of information recognized, long afterwards, by such eminent authorities as Agassiz and Asa Gray. While his great publication followed "Schoepf's Materia Medica Americana" (1787), and even B. S. Barton's "Collections" (1781–1804), it yet stood alone, being more comprehensive and discursive, and cosmopolitan, than either

* Readers are referred to the work by Dr. Alexander Wilder, titled "History of Medicine." Also to Dr. H. W. Felter's "History of the Eclectic Medical Institute," Cincinnati, Ohio.

of these. Rafinesque was eccentric, but yet a genius. Highly educated for that period, he was in some regards childlike, self-sacrificing to a degree, patient, visionary and speculative. He occupied a field of his own, that, notwithstanding his self-bred liberties in some directions, must be recognized for all time to come.

Rafinesque was the originator of the principles that later led to the evolution of the *Eclectic School of Medicine.* Indeed, after describing the various classes of American physicians and "dealers" of his day, he defined and introduced the term "Eclectic" as later adopted by Beach (see Beach, p. 27), placing it in a position of its own, as follows:

> The *Rational* medical men are liberal and modest, learned and well informed, neither intolerant nor deceitful, and ready to learn or impart information. They comprise the *Improvers, Eclectics,* and *Experimentalists.* * * * * * The Eclectics[1] are those who subject and adopt in practice whatever is found beneficial, and who change their prescriptions according to emergencies, circumstances and acquired knowledge.

Various names were given by Rafinesque to the plants observed by him, but while later botanists made many changes in plant nomenclature, it is to be noted that of the plants adopted by the Eclectic school of medicine, the name given by Rafinesque is to-day the principal name in Eclectic literature.[2] As typical of these, it is sufficient to mention *Macrotys,* universally known in Eclecticism under this name instead of *Cimicifuga,* by which later writers sought to displace the earlier name. Befitting is it that Wooster Beach, Alexander Wilder, John King and other Eclectics, should be considered as followers of Rafinesque, who believed that

"The state of medical knowledge is such in the United States as to require a greater diffusion of acquired knowledge, aided by freedom of enquiry, liberal views, and mutual forbearance,"

and who also believed that

"It is therefore necessary to spread still further correct medical knowledge."

We come now to the

First Publication of Wooster Beach.—In 1833 appeared "The American Practice of Medicine, on Vegetable or Botanical Principles," by Wooster Beach, M.D. This work which passed immediately into the hands of the people, was in its Introduction prolific in attacks on medical processes of that date. For example:

> "The world groans under the weight of medical publications, and is literally surfeited with them. But what are they? Are they such treatises, or such productions, as are calculated to cure diseases, or ameliorate the sufferings of mankind? They certainly are not, as we have fully demonstrated in the following pages. We have shown that the present practice of medicine, instead of exerting a salutary influence, is pernicious and dangerous in the extreme."

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[1] This is the first application of the term "ECLECTIC," to designate any school or class of practitioners of medicine established during the 19th century. The definition here given is sufficiently full and explicit to describe the physicians who afterward adopted the apellation. It is not so easy, however, to perceive why the other groups, the "Improvers" and the "Experimentalists," were not included with them, instead of being distinguished as separate bodies.

[2] Eclectics believe that an established drug name should not be changed to coincide with botanical alterations.

The "licensed physicians," with their heterogeneous processes and medicines, Beach describes as follows:

"They appear to be governed by no principles in the treatment of disease; or, if they have principles, they are at variance with the correct pathology of disease, which renders their treatment very defective, superficial, and often injurious, even more so than that pursued by common physicians. Some have receipts, but no principles; others again have theories, but no remedies. Thus we perceive the labyrinthe difficulties in which the medical world are involved. One system succeeds another so quickly that a writer has been constrained to say there is "no uniformity in medical practice." This year a medicine is extolled as a specific; the next it sinks into oblivion. This year one view is entertained of disease, perhaps the next, one entirely opposite."

Recognizing the efforts as well as the mistakes of medical authorities of his time, Beach testifies as follows to the renowned Dr. Samuel Jackson, of Philadelphia:

"Dr. Samuel Jackson, a very respectable physician of Philadelphia, of the old school, thus remarks: It is a subject of well founded complaint, that it has been a prevailing vice with medical writers, to indulge in partial, encomiastic, and it is to be feared, sometimes fanciful representations of the powers and efficacy of some favorite remedy or mode of practice, to the introduction of which into medicine, they have been instrumental, but have not been justified by subsequent experience. Sanguine expectations have been, in this manner, too often injudiciously excited, that have terminated in disappointment dark and bitter, as the hopes they had nurtured were bright and pleasing. How many of the articles of the former materia medica, celebrated for their virtues, are now known to be *inert* and *useless!* How many of our present medicines have been invested with curative energies for formidable diseases, in which a sober and matured experience has proved them to be of none or of little avail! What different systems and modes of treatment, founded on *baseless* theories, partial views, and limited observation, have enjoyed their short-lived reigns, extolled and defended by misjudging partizans, but which now lie entombed in dusty and undisturbed tomes, and are brought into recollection only to display the *errors* they embraced, and the *follies* of their pretentions?"

In like manner, Beach credits the efforts of nurses, female practitioners, and root and "Indian" doctors. Let us quote:

"I have spared neither pains not expense to acquire a knowledge of the practice of the most noted botanical physicians, retaining from each everything which I have proved by experience, to be useful. I have not thought it beneath me to converse with *Root and Indian Doctors,* and every one who has professed to possess any valuable remedy, or any improved method of treating any disease. The hints and suggestions of experienced nurses and female practitioners have not escaped my notice. For, says a former President of the New York College of Physicians and Surgeons, 'there is not a maxim or remark of any experienced female or nurse, which is not based upon sound pathological principles.' They are generally diligent observers of nature and often point out her indications in a correct and masterly manner, which often disappoints the physician and the friends of the patient. I have also availed myself of every advantage arising from a regular course of study in the University of the State of New York."

Finally, Beach appeals to "The people generally," regretting that therapeutic information was not being taught, authoritatively, to the laymen, contrasting with this neglect the processes adopted in other educational directions. He says:

"The different branches of philosophy have also of late been very universally studied by all who pretended to a liberal education. The advantages of this are manifest. It frees the mind from prejudices and superstition; fits it for the investigation of truth; induces habits of reasoning and judging properly; opens an inexhaustible source of entertainment; paves the way

to the improvement of arts and agriculture; and qualifies men for acting with propriety in the most important stations of life.

Natural History has likewise become an object of general attention; and it well deserves to be so. It leads to discoveries of the greatest importance. Indeed, agriculture, the most useful of all arts, is only a branch of Natural History, and can never arrive at a high degree of improvement where the study of that science is neglected.

Medicine, however, has not, as far as I know, in any country, been reckoned a necessary part of the education of a gentleman. But surely no sufficient reason can be assigned for this omission. No science lays open a more extensive field of useful knowledge, or affords more ample entertainment to an inquisitive mind. Anatomy, Botany, Chemistry, and the *Materia Medica*, are all branches of Natural History, and are fraught with such amusement and utility, that the man who entirely neglects them has but a sorry claim either to taste or learning. If a gentleman has turn for observation, says an excellent and sensible writer, surely the natural history of his own species is a more interesting subject, and presents a more ample field for the exertion of genius, than the natural history of spiders and cockle-shells."

Dr. Beach calls attention to the fact that it would be illogical to attempt to make physicians of the people at large. He believed, however, that they should be educated in the simplest form of anatomy and physiology, and should be instructed in the direction of simple ailments, as well as how to care for themselves in emergency cases. Such a course, he believed, would also protect them against superstition and quackery. Let us quote:

"We do not mean that every man should become a physician. This would be an attempt as ridiculous as it is impossible. All we plead for is, that men of sense and learning should be so far acquainted with the general principles of medicine as to be in a condition to derive from it some of those advantages with which it is fraught; and at the same time to guard themselves against the destructive influence of Ignorance, Superstition and Quackery."

In an altruistic manner he deprecates the methods of some of the leaders in medicine, as well as of the many concerned in medical politics. Very plainly does he speak:

"The veil of mystery, which still hangs over Medicine, renders it not only a conjectural but even a suspicious art. This has been long ago removed from the other sciences, which induces many to believe that Medicine is a mere trick, and that it will not bear a fair and candid examination. Medicine, however, needs only to be better known, in order to secure the general esteem of mankind. Its precepts are such as every wise man would choose to observe, and it forbids nothing but what is compatible with true happiness."

Criticizing the making of medicine as a close-communion professional trade, he advocates opening the door of knowledge to the people:

"Disguising medicine not only retards its improvement as a science, but exposes the profession to ridicule, and is injurious to the true interests of society. An art, founded on observation, can never arrive at any high degree of improvement, while it is confined to a few who make a trade of it."

Very severe is Beach on the mystery practiced by the licensed practitioner, linking the methods of even the honest physician who from the people disguises his processes, with those of the charlatan and the quack:

"The appearance of mystery in the conduct of physicians not only renders their art suspicious, but lays the foundations of Quackery, which is the disgrace of Medicine. No two characters can be more different than the honest physician and the quack; yet they have generally been very much confounded. The line between them is not sufficiently apparent; at least it is too fine for the general eye. Few persons are able to distinguish sufficiently between the conduct

of that man who administers a secret medicine, and him who writes a prescription in mystical characters and an unknown tongue. Thus the conduct of the honest physician, which needs no disguise, gives a sanction to that of the villain, whose sole consequence depends upon secrecy."

Attacking the method of protecting the physician by law, Dr. Beach advocates *the making of the people wiser:*

"No laws will ever be able to prevent quackery, while people believe that the quack is as honest a man, and as well qualified as the physician. A very small degree of medical knowledge, however, will be sufficient to break this spell; and nothing else can effectually undeceive them. It is the ignorance and credulity of the multitude, with regard to Medicine, which renders them such an easy prey to every one who has the hardiness to attack them on this quarter. Nor can the evil be remedied by any other means than by making them wiser."

To this he adds:

"The most effectual way to destroy quackery in any art or science, is to diffuse the knowledge of it among mankind."

In the following he strikes at the patent medicine man:

"A sensible lady, rather than read a medical performance, which would instruct her in the management of her children, generally leaves them entirely to the care and conduct of the most ignorant, credulous, and superstitious part of the human species."

Next we find a plea for good nursing and service to the poor:

"Many things are necessary for the sick besides Medicine. Nor is the person who takes care to procure these for them, of less importance than a physician. The poor oftener perish in diseases for want of proper nursing than of Medicine. They are frequently in want of even the necessaries of life, and still more so of what is proper for a sick-bed. No one can imagine, who has not been a witness of these situations, how much good a well-disposed person may do, by only taking care to have such wants supplied."

Dr. Beach closes his article by a plea in behalf of liberality of method and community education:

"To disenthral the public mind, medical men must cast off the whole garb of the charlatan, nor suffer anything to remain which shall confound medical philosophy with empiricism. The profession must seize every opportunity to educate the community to the first principles of medicine, and when this is accomplished, the medical scholar may, in public opinion, safely rest his ripened claims to reputation, which now is often wrested from him, when he will not resort to the degrading tricks of the charlatan to maintain it. * * * * *

"In addressing, therefore, the educated public, I conceive that I am indirectly subserving the true interests of my profession, while my direct object is the instruction of others. I consider, also, that it is an urgent dictate of humanity to furnish the community with a certain amount of knowledge, particularly in surgery, because at this time they are singularly ignorant of its simplest principles—because infinite mischief and suffering is created by its abuse—and because the maladies which demand the surgeon, are such as brook not a moment's delay. Accidents often occur which prove immediately fatal, when the knowledge of a single fact would enable any individual at least to arrest the hand of death till more efficient aid could be procured."

The entire Introduction of this work of Beach (often called the Father of Eclecticism) should be read by anyone interested in the problems discussed.[1] Enough has been cited to illustrate the position taken by Dr. Beach in this, the first balanced treatise on American medicine, designed for the American public.

[1] Foot-note preceding, considers Rafinesque to be the pioneer.—L.

In closing this phase of American medicine, let us now contrast the methods of Beach the "Father of Eclecticism" with those of his contemporary, Samuel Thomson.

1. Beach believed in education, in colleges of medicine, and in hospital service. Thomson, whose publications antedated those of Beach, opposed every phase of medical collegiate education, every phase of "licensed" medical practice, viciously assailing all the processes of the medical profession.

2. Beach believed in giving priority to vegetable remedies. So did Thomson. But Beach freely used whatever botanicals in his opinion served the interests of medicine, whereas Thomson excluded the use of all poisons, and bitterly assailed Beach and his followers for their use of such remedies as digitalis and hyoscyamus.

3. Thomson traveled over the country selling his patent rights to practice medicine, to whoever was in a position to purchase the same, whereas, Beach opposed patent and secret compounds.

4. Both Beach and Thomson believed in teaching the people how to care for simple ailments. Both were opposed to heroic medication, as practiced in their day. Alike they met the resistance of many excellent medical authorities who differed from some of their ideals. Each gave rise to a section in American medicine, one known as the Thomsonian, the other as the Eclectic.

Summary.—While a fraternal spirit existed between these independent schools of medicine, in that, both being ostracised and opposed by the "old school," they were at times forced to unite their efforts for their common protection, in some directions there existed between the Thomsonians and the Eclectics, greater bitterness than between either of them and the "old school."

For reasons that need not be there discussed, the Thomsonian school gradually lessened in importance, mainly because of the heroic processes adopted in its therapy. At the same time the Eclectic school increased in numbers, gradually forming a distinct organization and instituting several colleges in different parts of America, under the name "Reform" or "Eclectic." One of the oldest of these, founded under the direct auspices of Wooster Beach himself, was organized as the medical department of Worthington College under the name *Reformed Medical College of Ohio.* This institution was opened for instruction in December, 1830. In the winter of 1842–3 it was removed to Cincinnati, Ohio, where it still survives, a flourishing institution, under the title, *Eclectic Medical College.*[1]

Eclecticism as Represented by Dr. John King.—About 1852 appeared the epoch-making publication of Dr. John King, "The American Dispensatory," followed, in 1857, by his "American Family Physician or Domestic Guide to Health." Through their acceptance of the writings of King and other leaders, who followed Beach, the father of the school, the Eclectic school of medicine officially acquiesced in the view that the treatment of the people by balanced educational methods was an all important section of the physician's field. Let us then consider carefully the ideals of King, as presented in the Preface to his "Family Physician," the opening sentence of which reads as follows:

"In presenting this work to the public, it will be proper to remark that it is not designed to supersede the attendance of a physician in cases of disease, nor to make skilful practitioners of non-medical persons."

[1] See Felter's "History of the Eclectic Medical Institute."

In a pronounced manner King asserts that the physician is all important, in that disease as a whole can be rationally treated only by men of "medical education." He says:

"Medical education—a long and close study of the various departments of medical science, as Anatomy, Physiology, Materia Medica, Chemistry, etc., together with actual practical experience. Such knowledge and skill belong only to the educated physician, to whom it will always be found the most prudent and safest course to apply, whenever the symptoms of disease manifest themselves."

King admits freely the danger of illogical home practice, thus excusing educated physicians, as a class, for opposing it. Let us quote:

"Knowing the dangers to which the sick are exposed, when treated by persons not thoroughly conversant with medical science, the educated physician is usually opposed to the dissemination of popular works which instruct the people how to practice medicine, not because he desires to have them ignorant of such matters, but because he is aware that more evil than benefit is apt to follow the practice of even professing practitioners whose medical information is very limited."

Next we find a plea for general education in fundamental lines conducive to the care of the public:

"The better will it be for the liberal and unprejudiced physician, who is aware that the more the public know of the organization of the human system, its various functions, the causes of its impairment, as well as the means to repair it, because this knowledge, even limited as it may be, will aid in enabling the public to 'distinguish the man of merit from the pretender.'"

He argues, further,

"There very frequently are circumstances under which individuals may be placed, in which the possession of a work, written in plain language, with plain directions, may be the means of saving, not only health, but even life. * * * * *

"How often does it happen that a farmer becomes suddenly attacked with disease, or disabled by accident, in which delay would prove dangerous. A physician is sent for in haste, he resides many miles distant, and cannot be had for hours, perhaps days. If, however, a "Domestic Guide to Health" is at hand, the friends may refer to its pages, pursue the measures therein recommended, and not only save the patient much distress and suffering until the arrival of the physician, but perhaps, save his life. One life thus preserved, is a sufficient reason for the publication of a popular medical work."

Next he meets strictures already offered against home education, that will probably by some persons yet be offered:

"Although persons may undertake the management of minor maladies according to the book in their possession, it is rarely the case that they are disposed to trust themselves in the more severe forms, when the professional services of a physician can be had. In country places, and on plantations, patients are frequently lost, because the services of a physician cannot be procured in time; and at sea it is still worse, for weeks and even months may pass without the attendance of a medical man."

Having thus briefly covered the field as then presented in American practice he outlines the plan of the work, as conceived by him for the benefit of the people. His opening sentences are as follows:

"This work is more especially prepared for the purpose of meeting these emergencies, and, as the title imports, it is arranged to meet the wants of the physician, Families, and those residing on plantations, or traveling by sea or land.

"In the Introduction will be found valuable instructions for the promotion of health and longevity by hygienical and dietetical measures."

We are now prepared to comprehend more fully the aims of the author and the book itself, ("The American Family Physician"), which is dedicated *To The American People.* In this volume of 800 pages, Dr. King, in a plain, forcible manner, gives advice serviceable alike to physicians and pharmacists, as well as to the intelligent public. Throughout the entire work we find an effort made to teach the people the importance of the educated physician, and the necessity of leaning upon him excepting in emergencies, where they should be qualified, temporarily, to serve themselves. Let it be added that the ideals presented by King, no less than by Beach, permeated the physicians of the Eclectic school in America, and by fully establishing the fact that home treatment under advice of the physician, in the absence of the physician, was not antagonistic to the treatment of disease by the physician, helped physicians of other schools, as well as Eclectic. And thus King became, directly and indirectly, of incalculable benefit to the American people.

In the "Family Physician" were described, with processes for their home preparation, simple infusions and decoctions, as well as liniments, and simple remedial agents for emergency cases, such as diarrhea, eye affections, ailments of the skin, frost bites, coughs and colds, wounds and sprains. Many ointments and simple plasters were also described, as well as compounds that should be made by pharmacists and distributed to the people by physicians, to be kept in the home for use in the absence of the physician. Professor King believed that *the care of the family* was the responsibility of the physician, and that in the temporary absence of the physician, the family should not be deprived of his services. Nor did he believe that higher ideals, whether in medicine or in pharmacy, were advanced by the ignorance of the people.

We find that a whole line of domestic remedies became known to the people as presented under authority of Eclectic physicians. Thus, properly labeled and described, stillingia liniment became valued for throat ailments, lobelia compounds for threatened pneumonia, opodeldoc (not originating in King's School), for bruises and sprains, and various styptic powders and applications for the prevention of the flow of blood. Many remedies thus introduced, such as ophthalmic balsam as a substitute for "Pettit's Eye Salve," became very popular with the medical profession as well as the people, while King's "Neutralizing Cordial" which became so popular as, in 1860, to receive recognition, under the name *Syrupus Rhei et Potassae,* in the Pharmacopœia of the United States, is not the only Eclectic product contributed to the enrichment of that Standard.

Let us now pass to the next important work on domestic medicine, issued under the auspices of the Eclectic school of medicine.

Scudder's Domestic Medicine.—In 1887, thirty years after the issue of Dr. King's "American Family Physician," appeared the "Eclectic Family Physician," by Professor John M. Scudder, M.D., then a professor in the Eclectic Medical Institute, and a leading authority in the Eclectic school of medicine. Dr. Scudder had written several publications designed for the exclusive use of physicians, and yet believed that a publication that would bring families under the care of the physician, into closer touch with the medical profession, was desirable. He

accepted also that to institute home treatment of disease, under the authority of the physician, would tend to separate the people from the pernicious influence of advertised cure-alls, as well as objectionable, or even harmful, advertised preparations that should not be in the hands of the people. It will be seen that this line of reasoning agreed with the early processes of the eclectic school of medicine, as instituted by Beach and continued by his followers, including Dr. John King.

With these suggestive remarks, let us quote the opening sentence of the Preface to Dr. Scudder's "Eclectic Family Physician:"

"The present volume is offered to the public with the belief that there is an earnest desire by many to understand more of the structure and functions of their own bodies, and to qualify themselves to meet cases of emergency, when a competent physician cannot be obtained."

The following sentence comments upon the fact that a knowledge of human anatomy, physiology and ailments, was woefully lacking with the American people:

"Men and women know less of themselves than they know of anything else, and it is not only surprising, but often humiliating, to witness the gross ignorance displayed on these subjects by persons who are otherwise well informed."

Dr. Scudder next touches the question of hygiene and lack of good nursing, also the fact that the reasoning power of the sick is enfeebled, so that they cannot distinguish between the educated physician and the charlatan. He writes:

"It would seem, sometimes, as if man's reasoning powers were in complete abeyance when they or their familes are sick, being as ready to employ the merest charlatan or nostrum vender, as the educated physician, and to disregard the plainest rules of hygiene, as to give the patient good nursing."

Commenting on the fact that life and health are dearer than worldly possessions, he criticises the people's lack of care in conserving good health:

"There is nothing that a man loves as he loves life, and life has no blessing like health; why, therefore, are people so indifferent to that knowledge that will enable them to prolong the one, and preserve the other?"

Having made these arguments, all of which are addressed to the laymen, he asserts:

"Men and women should care to understand the structure and functions of their own bodies, and how to avoid the causes of disease. So, also, should they use a sound discretion in selecting a medical adviser, and avoid ignorant pretenders, and patent nostrums, using their reason from absolute knowledge, and not governed by emotional impulse, or by novelty or superstition."

Having thus discussed the problems with his reader, he asks why these conditions exist. In doing this, he makes a genteel criticism of both the medical profession and the laymen:

"The reasons for this present themselves to me as follows: First, physicians in all ages have tried to confine a knowledge of medical subjects to their own profession, and have successfully accomplished their purpose by making it a breach of *medical ethics* to write on medicine for the people. Second, the public have been instructed to believe that these subjects are beyond the ordinary powers of comprehension; that there is something impure, if not sinful, in their study and that it would be a great breach of propriety, if nothing worse, to endeavor to learn that which has so strenuously been kept from them."

Accepting, as did his predecessors, that one danger in home medication lay in the fear that, through the emergency care of the afflicted and wounded, the minds of the laymen might be imbued with the thought that the care of the educated physician could be generally displaced by such processes. This phase of the problem is discursively met by Dr. Scudder, as follows:

"In undertaking to present that knowledge which I consider it the duty of every one to possess, I do not wish to be understood as holding the opinion 'that every man can be his own doctor.' Every person should know how to avoid disease, how to act in cases of accident and injury, how to treat simple cases of disease, and how to nurse and properly care for the sick. It is this knowledge that I have attempted to give in the following pages, using plain language that may be understood by all.

"I am satisfied that no person who will carefully read its pages, will be led into injudicious experimenting upon their own bodies, or their neighbors, but that they will be enabled, in most cases, to decide when simple remedies are sufficient, and when it is necessary to have skilled advice."

In one important respect, Dr. Scudder deviates from the methods of his predecessors. Instead of attempting to include in his volume under his own name, a problem of nursing, he refers his reader to the publication of "Miss Florence Nightingale," who for her self-sacrificing efforts he eulogizes, as follows:

"On the subject of nursing, I have preferred to give the small work of Miss Florence Nightingale complete, rather than write on the subject myself. Her devotion to the sick and wounded in the Crimean war, placed her foremost in the list of benevolent women, and gave her a world-wide reputation. In this small volume she gives the results of a lifetime's experience, and, addressed by a woman to those who have care of the sick, it cannot but make a good impression. The language is clear and concise, and her deductions are based on a very large experience, and upon the facts of science."

In his introduction (following the Preface), Dr. Scudder considers briefly the origin of medicine, and the differences between the various schools of medicine, all of which he conceded, are imbued with the same kindly tone and humanitarian ideal. After this he discusses briefly, neglected educational opportunities of the laymen, such as anatomy, which should be generally understood, physiology as being possible to a layman, and hygiene that should be comprehended by everyone. He takes up (Part III) "Medicine for Family Use," conservatively introducing the problem as follows:

"Medicines for family use should be few and simple, and such as will tend to favor nature's processes of cure. The harsher and more violent means of treatment should always be left in the hands of the physician, as it is not to be supposed that the unprofessional person can have such knowledge and experience, as will render their use safe and beneficial. Medicine should be used only when there seems to be absolute need for it, and in all, but the milder cases of disease, under the direction of a well educated physician. Still, there are many minor ills that may be appropriately treated by the family, and in many cases it being impossible to obtain a physician, even severe cases, will for a while, remain under domestic management."

With the confidence both of the physician experienced in family practice, and as one imbued with the highest ideals as concerns the welfare of both the laymen and the physician, Dr. Scudder in this book defines symptoms and describes prevailing diseases, in language that a layman can comprehend. Strange that anyone should oppose such processes. Surely the giving of information to persons

far removed from the physician, as in the mountains or on the desert, or the teaching of a mother how to meet a sudden attack of croup, or incipient pneumonia, how to bandage and dress the wound of a child, how to care for bee-stings and bites of venomous creatures, and what to do in other emergencies in the absence of the physician, is conducive to the true ethics of the profession, as well as the best interests of the people. A man qualified to treat sunstroke, how to resuscitate a person suffocated by drowning, how to manage burns, should not be forbidden to do so either by professional ethics, or by law. Just how far these processes may be carried into home life, depends upon the intelligence of the family, and the instruction given by the physician caretaker, but, here partial comprehension is better than total ignorance. In Dr. Scudder's opinion, the qualified physician, not the almanac, (too often the resort of others than the ignorant in his day), was the proper agent to determine this point, and to guide, as well as protect, the public. He went beyond Dr. King, in that he devised a *family medicine case*, to be placed in the home by the attending physician, or purchased from the pharmacist under his guidance, arguing that:

> "Every family should keep such remedies in the house as will answer in trivial cases, and even to be given in the severer ones, until a physician can be obtained."

Dr. Scudder taught the people more explicitly and directly than did Dr. King, and extended his advice more technically, accepting that the people were then better informed than when Dr. King in 1857 presented his "Family Practice." In this he succeeded admirably. Even in a large city practice like that of Cincinnati, he established a record that may be taken as a typical example of professional service, rendered under ideals that made the physician a home adviser and family care-taker. Although Dr. Scudder's practice was large, few, if any patrons were left uninformed concerning self-care such as has been stated herein. The writer of these lines speaks by authority, in that, not only were these people made self-dependent in emergencies, but were drawn closer to Dr. Scudder than one could have thought possible. Instead of considering the physician as a dealer in the mysterious, or an autocrat of a superior class, their balanced judgment led to greater dependence on this man, who took even little children into friendly confidence. Instead of the almanac, Dr. Scudder became thus their therapeutic teacher. Instead of the newspaper, the medical profession as a whole became their recognized authority.

Seldom was a secret or advertised cure to be found in the family of a patient, either of Dr. King in former times, or later, that of Dr. Scudder. The harmless and yet effective family medicines introduced by Drs. Beach and King—such as Neutralizing Cordial, Stillingia Liniment, various home-made teas, decoctions and Infusions, well-known herbs, barks and roots, Dr. Scudder replaced with more elegant pharmaceutical preparations, previously unknown. Possibly in this sense one might even criticise the introduction to home use of some of the energetics constituting Dr. Scudder's medicine case, but so thoroughly informed were the recipients of the case that I have never known a harmful result to follow their use.

(To be concluded in August Issue)

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

(We may not all agree with Dean R. A. Lyman's views on "The Three Year Course in Pharmacy," but we must admit that he is hitting at the weak spot in pharmaceutical education. Vocational training is bound to narrow our views of the general field of any subject, and it is to be hoped that our Three Year Courses will be less vocational and thus enlarge our field of vision. —C. B Jordan, EDITOR.)

THE THREE-YEAR COURSE IN PHARMACY.

BY RUFUS A. LYMAN.

During the spring months, there have come to my desk a number of special announcements setting forth the program of the minimum three-year course as planned in various Conference schools. When an institution takes the trouble to get out a special bulletin descriptive of a new program one rather expects to find something unusual, which would call forth such an effort. With this in mind, a study of these announcements is disappointing. In some cases the new three-year course is the old two-year course sprawled out. Occasionally a new course seems to be added to the curriculum. A closer analysis is apt to reveal the fact that the new courses are the old ones subdivided. When new ones have actually been added they smack of the trend of the times—a trend which the pharmacist alone is not guilty of following, namely—the filling of the curriculum with courses which seem "practical." A "practical" course may be defined as one which represents the application of learning but which does not constitute learning itself. On the other hand the study of some of the catalogs of recent date are more refreshing. In the development of the three-year course some men have sensed the weak points in the present day pharmaceutical training, namely, its extreme materialism, its so-called "practical" nature; its ever-narrowing tendency; its emphasis on non-essentials; its emphasis upon a training which is intended to satisfy only the needs of to-day; its failure to train so as to meet the needs of to-morrow; in a word—its lack of vision.

In the May number of the *Atlantic Monthly* is an article by John Hayes Taylor, which is deserving of the attention of every individual who sets himself up as a teacher. In the following sentences he shows the weak points in our educational efforts.

"How far the schools of the country are contributing to the apparently growing materialism and to the certainly growing crudity of life it must be difficult to say. Perhaps they are only exponential of it, a result more than a cause. In that case we are only going in a circle, undoubtedly vicious. Certainly the schools are catering to this instead of opposing it. The great accusation against them is that they are so largely substituting a lower motive in education for a higher one. One hears 'practical' spoken much oftener—certainly much louder—than one ever hears 'scholarship' or 'truth' or 'wisdom'. As for 'culture' one grows shy and hesitant over saying it at all. Steadily and firmly other motives are taken away from the student until often nothing higher is left to him than the necessity of making a living. Apparently he is to live only to come out even with himself at the end. 'The teacher and mother should confer together (sic),' I heard a lecturer on vocational guidance say, speaking of the child in the fifth

grade or thereabout, 'after all the tests have been made, and decide upon what is necessary to prepare the child for his vocation.' It sounds unbelievable. What has become of the 'complete and generous education?' And what about fitting a man to perform 'justly, skillfully, and magnanimously all the offices, both private and public, of peace and war?'

"There is no reason why the learning or partial learning of a trade or profession should not be combined with stages of education. The harm is done when learning a trade is called education and when the whole motive of education is reduced to the utilitarian one. This is so evident that it seems trite to say it; and yet the condition goes on. The whole scale of acquisition is lowered. The result of the application of the practical motive is that the proportion of values in subjects and in training is lost. Students and instructors alike seem to lose it. Applied science is placed on the same level with pure science—if not higher. Pupils are taught little difference in final value between cooking and chemistry, between collecting items of school news and that study of great literature, between bookkeeping and higher algebra, between carpentering up a bookrack and learning the principles of physics. If there is any superiority it is on the side of the deduced thing, not on that of the fundamental principle. In fact it is generally true, I think, that while instruction in science may be very modest and matter-of-fact, instruction in applied science or anything industrial is almost blatant in its assertion of importance, when once it gets its toe into a curriculum. The essential value of the general over the particular, of truth over fact, of principle over skill, is not thus learned. No scale of values—or none that recognizes the greatness of ideas and the domination of law—is established. The first great chance of the pupil is lost. He doesn't learn the difference between the little and the great."

We cannot expect the student to grasp the difference between the little and the great, the non-essential and the essential, when we as teachers do not grasp it. Not only are these facts evidenced by our curricula; they are reflected in our pharmaceutical literature—from our textbooks of pharmacy to the pharmacopœia itself. In our rage for the "practical," and in our desire to eliminate from our curricula everything except what the "poor boy will use in a drug store," we have reduced our courses to next to nothing and our profession below the horse doctor rank.

Once in my younger days, I recall a suggestion was made in the Conference that we specify some qualifications for teachers of pharmacy. The suggestion called forth a flow of wit and sarcasm from a prominent Dean of Pharmacy, who has since passed away. He raised the question as to who had the right to say that he was or was not qualified to be a teacher of pharmacy. The suggestion was considered a huge joke and the incident ended in a fiasco. One thing is certain—the teachers of that day did not produce a group of far-thinking men of to-day. They may have produced a group of detail or routine workers but they certainly did not produce a group of thoughtful educated leaders who were able to place pharmacy on a plane comparable to that of the other professions. Neither did they give pharmacy scientific standing or respect in community life. Every executive knows how difficult it is to-day to go into the man market and obtain a man "trained in pharmacy" who can come into a university community and place pharmacy upon a par with the other professional subjects. And fewer still are there who can meet the supreme test—namely, obtain for pharmacy a just and dignified share of the funds set aside by the state or other donor for the purpose of education.

There has just been broadcasted the results of the research census authorized by the National Council on Pharmaceutical Research. No one who understands the field of operation of pharmacy has ever questioned whether there was a field for pharmaceutical research. The field is unlimited. The question has been

are there any men "pharmaceutically trained" who are trained in such a way that the results they obtain will stand the critical tests of modern scientific investigators. The Chairman of the Research Committee of the Association calls attention to the fact "that pharmaceutical research is an attractive field is shown by the great work being done by nonpharmacists in the preparation of medicinal chemicals." It is a sad state of affairs when one of the most important phases of pharmaceutical research is being accomplished by men not pharmaceutically trained. It must continue to be so until we build our curricula so that students are trained in the basic things. Again the Chairman calls attention to the "statistical research now being performed by the Commonwealth Foundation." But again it is significant that the moving spirit of that study is not pharmaceutical. When one reviews the whole field of pharmaceutical activity one certainly has the feeling that something must be the matter either with the teachers of pharmacy or with pharmacy itself. To have the former proven true would be humiliating but to have the latter proven true would eliminate pharmacy from the field of science and professionalism.

It is impossible to produce a high class professional man to-day without the proper "background" training. This was recognized a long time ago by medical men. It has more recently been recognized by dental educators. It is now universally recognized by farmers and business men. It has not yet been universally recognized by pharmacists—at least it is not reflected universally in the published programs for the three-year course.

In pharmacy only do so-called educators still look to the state boards for ideals. As long as leadership in education is limited to state board standards, pharmacy will continue to be the cow's tail of the professions. High school students even are beginning to recognize the value of fundamental training preparatory to the training they are to get in life's school. Last week I gave a high school commencement address in a typical western Nebraska village. The village school district had been recently enlarged to include forty sections of the countryside. Six automobile busses were used to carry the children to the school. The graduating class consisted of five boys and twelve girls, every one of them from the country. As is usual on such occasions a pastor was asked to give the invocation and the benediction. When this minister was introduced to me he informed me that he was the pastor of a country church some six miles distant. He was a young man very dignified in demeanor and he spoke perfect English. When opportunity offered I inquired of the superintendent why the local pastor had not been used on the program. He informed me that he had been asked to but had become offended because the graduating class refused to have him for the baccalaureate address since he spoke such poor English. Because of this rebuff he had refused a place on the commencement program. Even twelfth graders in the country may be humiliated by a "professional" man who has not proper background training. After the commencement program was over I heard that the local pastor had been appeased by the Board of Education. They employed him to drive me twenty miles across country to the main line of the Burlington in order that I might be in my classroom the next morning. I must confess that in spite of his terrible English he drove an automobile very well. But I would much prefer to have him drive me in an automobile than to minister to my soul. I have not

been able to convince one of my colleagues that a certain druggist in Lincoln is a very careful compounder. This druggist was once a student in my colleague's Greek class and he insists that because this pharmacist was reckless in his translation of the Greek language he must also be reckless in the compounding of a prescription.

This morning I attempted to show my twenty-year old daughter the technique of a dance step that I thought I understood. After watching my performance for a moment she laconically remarked, "Daddy, what you need is some general training along the lines of being graceful." In a word, that intelligent young lady summed up the reasons why I can never become a dancer. The trouble is with my background training. That is just where the pharmaceutical training of to-day fails. We are trying to produce experts that have not had the "background" training.

The men who build our pharmaceutical curricula seem just now to be resting upon their oars awaiting the publication of the study of pharmacy being conducted by the Commonwealth Foundation. This is unfortunate. The Commonwealth study will undoubtedly be of great value but the keynote of that study is to determine what a pharmacist needs to know to-day to give an intelligent pharmaceutical service. That of course will be a great step in advance for the service which is actually being rendered to-day by the average so-called commercial pharmacist is extremely unintelligent. The Commonwealth study is not going to tell us what a pharmacist will have to know to give an intelligent pharmaceutical service two or three decades in the future. The pharmacist must not only be trained so that he can render an intelligent pharmaceutical service to-day but he must be so trained that he can later train himself to practice pharmacy as it must be practiced in the future. No one can tell what that will be. It will be determined, in the first place, in part, by the development in those sciences such as medicine, veterinary science, agriculture, horticulture and those industries which are intimately related to pharmacy. In the second place it will be determined to a very large degree by the capacity of the students entering now or about to enter our colleges. In the third place the future of pharmacy will be shaped by the vision these students are given by teachers in the colleges. If that vision is mainly "to get by the board," pharmacy will not progress. I know of a number of schools where that is the vision given the student. Ex-President James of the University of Illinois once stated the truth in an interesting way when he said, "The vision of the average teacher of pharmacy is bounded by the four walls and the ceiling of a drug store." He said nothing about the floor. I took it for granted that he thought the vision would not escape by way of the basement. And lastly the future of pharmacy will be determined by the training these men are given in our schools. The only hope for growth is that we insist upon a broad fundamental training that gives a man a background that will enable him to adapt himself and his service to the ever-changing conditions of complex modern life. This must be our one thought in the lengthening of the pharmaceutical curriculum.

PROGRAM OF NATIONAL ASSOCIATION BOARDS OF PHARMACY, FORT DES MOINES HOTEL.

First Session, Monday, August 24, 1925, 9.00 A.M.

1. Call to order—President H. Lionel Meredith
2. Calling roll of Member States
3. Appointment of Committee on Credentials—President Meredith
4. President's Address—H. Lionel Meredith
5. Appointment of Committee on President's Address
6. Report of Executive Committee—L. L. Walton, Chairman
7. Report of Secretary—H. C. Christensen
8. Report of Treasurer—J. W. Gayle.

Second Session, Monday, 2.00 P.M.

1. Report of Legislative Committee—John Culley, Chairman
2. Report of Committee on Credentials
3. Appointment of Nominating Committee
4. Report of Advisory Examination Committee—H. C. Christensen, Chairman
5. Report of Syllabus Committee
6. Report of Committee on Federal Legislation—W. T. Kerfoot, Jr., Chairman
7. Verbal Report of Vice-Presidents:—

District No.	1—H. M. Lerou	District No.	5—W. J. Cox
	2—A. C. Taylor		6—Tom Hadley
	3—O. J. S. Boberg		7—W. M. Hankins
	4—W. W. Haire		8—Chas. J. Clayton

District No. 9—A. G. Hulett

Third Session, Tuesday August 25, 1925, 9.00 A.M.

JOINT MEETING OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY AND THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

Report on Progress of Pharmacy Survey—Dr. W. W. Charters.

"Readjustments incident to changing from the two-year course to the three-year course." Frederick J. Wulling, E. R. Serles, H. M. Faser, Robert P. Fischelis.

"How much practical experience shall be required in addition to three years in college?" H. C. Washburn, W. F. Rudd, Clair A. Dye, John Culley, H. L. Haussamen.

Speakers will be supplied by the National Association of Boards of Pharmacy.

Fourth Session, Tuesday, 2.00 P.M.

1. Report of Committee on President's Address
2. Report of Standing Committees
   - Advisory Publicity Committee—A. L. I. Winne, Chairman
   - N. A. B. P. Committee on Educational Standards—W. D. Jones, Chairman
   - Committee on Constitution and By-Laws—W. H. Hankins, Chairman
   - Committee on Relations of Boards with Colleges—E. V. Zoeller, Chairman
   - Committee on Standards and Requirements for Classification of Colleges of Pharmacy—H. Lionel Meredith, Chairman
   - Committee on National Certificate—H. C. Christensen, Chairman
   - Committee on Registration and Reciprocity for Assistants—R. L. Swain, Chairman
   - Committee on Ownership of Drug Stores—Edw. H. Bloomfield, Chairman.
3. Report of Special Committees
4. Unfinished Business
5. New Business
6. Report of Nominating Committee
7. Election and Installation of Officers.

PLANT SCIENCE LABORATORY SEMINAR AT UNIVERSITY OF MINNESOTA.

Plant Science workers of the U. S. are cordially invited to attend one or all of the sessions to be held by research workers in Pharmacognosy, Pharmaceutical Chemistry and Botany at the College of Pharmacy, University of Minnesota, the week of August 17, 1925.

An opportunity for close and extended conferences between those who are primarily interested in vegetable drugs has been created through the organization of the Plant Science Laboratory Seminar, the first session of which was held at the University of Minnesota during August, 1923; the second session was held at the University of Buffalo, College of Pharmacy in 1924, and the third session will be held at the University of Minnesota, College of Pharmacy, during the week of August 17, 1925.

Pharmacognosists, plant chemists, botanists and others interested in medicinal plants, vegetable drugs and food products have a great opportunity for promoting their work through this Seminar. Over forty of the leading workers in these fields have taken part in previous meetings. The value and the success of the conferences is demonstrated by the fact that at each succeeding meeting practically all of those who attended previous meetings were on hand and took part in the work. The programs consist primarily of demonstration of research methods for determining the quality and purity of vegetable drugs and of discussions on research, analytical and teaching methods and standards. Many retail pharmacists have found the meetings of interest and of value and have attended. Up-to-date information, not readily available in current literature, is secured by these pharmacists which they in turn make immediate use of in the conduct of their professional practice.

The purpose of the Seminar is that each worker shall have the opportunity to pursue investigations in his particular field, to demonstrate his work and methods and to discuss the results with other workers. The entire facilities of the College of Pharmacy of the University of Minnesota and of allied departments will again be placed at the disposal of those who may wish to take part in the 1925 Seminar. Extensive field work as well as laboratory work is planned.

This advance announcement is for the purpose of informing all of the nature of the work which has been done in the past and to specifically invite all who will attend the 1925 meeting to immediately advise Dr. E. L. Newcomb, Editor of the *Northwestern Druggist*, who also serves as chairman of the Seminar, of their intention to attend and of the particular subject which they will discuss or upon which they will work during the week of the conference. A further announcement giving the details of the 1925 meeting will be issued about August 1st.

No better idea can be given to illustrate the nature of these most interesting meetings than to give a brief abstract of the two-day meeting held in Buffalo last August. This meeting was attended by representatives from the leading colleges of pharmacy and manufacturing houses of the country also by delegates from the United States Bureau of Chemistry.

Chairman Newcomb in opening the meeting briefly reviewed the work of the Seminar and called particular attention to the complete report of its activities as published in the *American Journal of Pharmacy*, Vol. 96, p. 80–114, 194–225. Secretary Viehoever reviewed the program for the meeting and Dr. H. W. Youngken presented a report for the committee on Botany and Pharmacognosy of the National Research Council, which committee is composed of five pharmacists. Secretary Viehoever outlined the work being done by the National Conference on Pharmaceutical Research and emphasized the opportunity for coöperative work on the part of the Seminar.

Professor E. N. Gathercoal and Professor C. J. Zufall accepted the problem of an extensive survey on the distribution and available supplies of Rhamnus Purshiana. Professor Youngken and Professor Zufall took up the question of the supplies of American Aspidium or Male Fern and agreed to carry on a survey on the avaliable supplies of this plant in this country.

The question of quantitative microscopic analysis was discussed and a special committee appointed to carry on referee work on this subject during the year. The differences of opinion on the therapeutic value of red and white Squill were discussed by Dr. Munch of the Bureau of Chemistry and arrangements made for the exchange of material which it is hoped may lead to the ultimate settlement of this question. Dr. Viehoever presented the results of some new studies on Digitalis with particular reference to the seed of the plant. Professor Gathercoal presented a summary of the work which had been done looking toward the establishment of definite color

standards for the U. S. P. and N. F. Professor Newcomb presented a report on the different types of drug mills being used in the country and accepted an assignment for the making of a survey relative to the drug milling and sifting machinery.

Dean Wulling of Minneapolis emphasized the need for coördinating efforts between different research workers and for active coöperation with state pharmaceutical associations. Following Dean Wulling's address Professor Day moved that the Seminar recommend to state pharmaceutical associations the consideration of problems on the conservation of medicinal plants in connection with forest preservation and that these associations be urged to appoint committees to coöperate with state universities, colleges, other interested institutions and proper state and county officials. It was further moved that the secretary of the Seminar be directed to communicate with the state pharmaceutical associations urging these organizations to support research work including surveys of native medicinal plants.

Educational problems were discussed by Professor Canis who emphasized the need for closer agreement relative to the kind and character of botanical teaching in the different colleges of pharmacy. It was decided to devote one session at the 1925 meeting to a discussion on methods of teaching Botany, Pharmacognosy and Materia Medica.

Dr. W. O. Emery of the Bureau of Chemistry discussed some of the control problems with particular reference to the examination of tablets and triturates. Dr. Munch outlined the work being done by the Bureau of Chemistry on the control of uniformity and therapeutic action of biological products. The Seminar agreed that while interstate enforcement of drug laws was fairly efficient, a large amount of work should be done in the enforcement of laws within the respective states. Practically every state in the union has a Food and Drugs Act, and while the enforcement of the food part is frequently efficient, the enforcement of the laws relating to drug standards within the state is for the most part inadequate.

A demonstration was made by Dr. Viehoever on the work by Sievers and others on plant insecticides. Here again a number of recent research results of immediate value to pharmacists were brought out and explained. Dr. G. L. Keenan of the Bureau of Chemistry presented a paper on "Methods and Procedures Helpful in Plant Analysis." Dr. Viehoever demonstrated new apparatus for the detection quantitatively of foreign inorganic matter in vegetable drugs. He displayed samples of new spices, drugs and economic products including Chinese Cardamom, the fibre of Skunk Cabbage and the silicified tissue of Equisetum, the latter products being used in upholstering work.

The work of the Bureau of Chemistry with respect to the enforcement of labeling provisions for drugs and medicines was discussed by Dr. Munch. Particular attention was given to the labeling of biological products and to the question of presence or absence of vitamins in various foods and drugs. The group went on record as favoring biological assay methods for medicinal preparations which could not be satisfactorily standardized by chemical processes.

Specimens were exhibited by J. F. Clevenger of the Bureau of Chemistry of the different products being offered for "Cactus Grandiflorus N. F." The scope of an investigation under way by the Bureau of Chemistry to determine what plants of cactus should be recognized and whether or not any have real medicinal value was outlined.

Dr. Emery discussed his latest research work with vitamins and described his success in obtaining crystalline picrate derivatives of certain vitamin fractions. Dr. Emery also gave a report on his work with the growing of hybrids of orchids and announced a new form which had been produced. Work on the production and study of *Podophyllum Emodi* was outlined by Professor Newcomb.

Professor Morgan directed a botanical excursion through the medicinal plant garden of the Buffalo College of Pharmacy. He also demonstrated the flora in the vicinity of Buffalo.

This brief outline of the more important features of the Buffalo meeting gives some idea of the tremendously interesting nature of the work being conducted by the Seminar. The officers have purposely arranged the 1925 meeting for the week preceding the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, which will be held in Des Moines, Iowa. It is hoped that a large number interested in the field of work covered by the Seminar will immediately advise Chairman E. L. Newcomb, College of Pharmacy, University of Minnesota, of their intention to attend the Seminar to be held in Minneapolis the week of August 17th.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council."—Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

NORTHERN OHIO.

The regular meeting of the Local Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held June 5, 1925, at the Olmsted Hotel jointly with the Northern Ohio Druggists' Association. Dr. M. A. Blankenhorn, Professor of Medicine, Western Reserve University, addressed the meeting on "Old Drugs with New Uses." Included in the list of drugs discussed was Hexamethylamine, Mercury, Digitalis, Carbon Dioxide, Salvarsan, Adrenalin, Magnesium Sulphate, Bismuth Salicylate.

EDWARD D. DAVY, *Secretary.*

UNIVERSITY OF WASHINGTON.

The May meeting of the Branch was held at the University Commons, preceded by an informal dinner. The following officers were elected to serve for the coming year.

President, P. F. Bradshaw.
Vice-President, M. K. Seidenfeld.
Secretary, H. A. Langenhan.
Treasurer, Caty Braford.

The secretary's report showed an increase in membership of twenty-seven since January 1, 1925. Practically all upper classmen are members of the Branch.

Dr. C. W. Johnson and Dr. E. V. Lynn were elected delegates to the National Convention at Des Moines.

Following the business session Dr. Johnson addressed the assembly, after which President Suzzalo, of the University, presented an informal talk on the standing and responsibilities of the pharmacist. The fact that President Suzzalo cancelled a previous appointment in order to be present at the meeting was very much appreciated by the members. President Suzzalo, as a member of the Board of Directors of the Commonwealth Fund, which is now making a survey of Pharmacy, is well informed on "professional" pharmacy and offered a surprise or two in the form of his knowledge on the inside information of this profession.

H. A. LANGENHAN, *Secretary.*

UNIVERSITY OF WASHINGTON BRANCH, A. PH. A., HONOR MEDAL.

The University of Washington Branch offers a gold medal for the graduate of the three-year course having the highest scholastic record during the entire course. The 1925 medal was awarded to Miss Kiyo Ariizumi of Seattle. Out of the total of 127 credits, Miss Ariizumi received A-(96 or over) in 117 credits and B-(86–96) in 20 credits.

All honors granted in pharmacy were conferred upon the recipients Friday, June 5, by Dean Johnson during a general pharmacy assembly.

H. A. LANGENHAN, *Secretary.*

IOWA BOARD OF PHARMACY EXTENDS INVITATION.

Iowa Board of Pharmacy Examiners are sending out an invitation to attend the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION. They welcome you to their office at the State House, and the invitation is signed by all the members, namely, W. W. Haire, George Judisch, J. W. Slocum and H. E. Eaton.

A. PH. A. INSTALLMENTS.

If you have overlooked your A. PH. A. installments, send them in before the convention to Business Manager, Mr. F. C. Bortner, Charles and Franklin Sts., Baltimore, Md.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1924–1925.

Office of the Secretary, 192 Roseville Ave., Newark, N. J.

LETTER NO. 7.

June 23, 1925.

To the Members of the Council:

71. Nomination of Full Time Secretary: Dr. E. F. Kelly has been selected as the nominee of the Council for the position of Full Time Secretary of the Association. (See item 64, Letter No. 6, page 551.)

72. Appropriation for Publicity Bulletins: Motion No. 32 (see item No. 65, Letter No. 6, page 551) has been carried authorizing an appropriation of $1000 for publicity bulletins to be distributed by Prof. Newcomb through the House of Delegates.

73. Resolution on Manufacture and Sale of Alleged Alcoholic Medicinal Preparations: Motion No. 33 (see item 67, Letter No. 6, page 551) has been carried and the resolutions submitted by the Committee are therefore approved.

74. Election of New Members: Motion No. 34 (see item 68, Letter No. 6, page 552) has been carried. Applicants for membership numbered 194 to 254, inclusive are declared elected. Motion No. 35 (see item 69, Letter No. 6, page 553) has been carried and applicants for membership numbered H-227 and H-330 to H-379 inclusive are declared elected. Motion No. 36 (see item 70, Letter No 6, page 553) has been carried and applicants for Life Membership numbered L. M.-20 to L. M.-25 inclusive are declared elected.

75. Tentative Program of Des Moines Meeting: Secretary Day submits the following tentative program for the Seventy-Third Annual Meeting to be held at Des Moines the week of August 24th:

GENERAL PROGRAM FOR SEVENTY-THIRD ANNUAL MEETING, A. PH. A.

MONDAY, AUGUST 24, 1925.

9:00 A.M. Meeting of the Council.
9:00 A.M. National Association of Boards of Pharmacy.
2:00 P.M. National Association of Boards of Pharmacy.
2:00 P.M. American Conference of Pharmaceutical Faculties.
8:00 P.M. National Association of Boards of Pharmacy.
8:00 P.M. American Conference of Pharmaceutical Faculties.

TUESDAY, AUGUST 25, 1925.

9:00 A.M. Joint Session National Association of Boards of Pharmacy and American Conference of Pharmaceutical Faculties.
2:00 P.M. National Association of Boards of Pharmacy.
2:00 P.M. American Conference of Pharmaceutical Faculties.
7:00 P.M. First Session House of Delegates, American Pharmaceutical Association.
8:00 P.M. First General Session, American Pharmaceutical Association.

WEDNESDAY, AUGUST 26, 1925.

9:00 A.M. First Session, Section on Historical Pharmacy.
9:00 A.M. First Session, Section on Commercial Interests.
9:00 A.M. First Session, Scientific Section.
10:00 A.M. Drive about Des Moines, for the ladies only; Buffet luncheon, at 12 M. at the Hyperion Club.
2:00 P.M. Second Session, House of Delegates.
7:00 P.M. Meeting of the Council.
9:00 P.M. President's Reception and Ball.

THURSDAY, AUGUST 27, 1925.

9:00 A.M. First Session, Section on Practical Pharmacy and Dispensing.
9:00 A.M. First Session, Section on Education and Legislation.
9:00 A.M. Second Session, Scientific Section.
9:00 A.M. First Session, Women's Section.
2:00 P.M. Second General Session of the AMERICAN PHARMACEUTICAL ASSOCIATION.
4:00 P.M. Third Session of the House of Delegates.
7:00 P.M. Meeting of the Council.
8:30 P.M. Joint Session of Scientific Section with the Section on Practical Pharmacy and Dispensing.

FRIDAY, AUGUST 28, 1925.

9:00 A.M. Second Session, Section on Historical Pharmacy.
9:00 A.M. Second Session, Section on Commercial Interests.
9:00 A.M. Third Session, Scientific Section.
1:30 P.M. Second Session, Section on Education and Legislation.
1:30 P.M. Second Session, Section on Practical Pharmacy and Dispensing.
3:00 P.M. Final Session, House of Delegates.
7:30 P.M. Final General Session.
9:30 P.M. Meeting of Council.

SATURDAY, AUGUST 29, 1925.

Visit to the State Fair.

(*Motion No. 37.*) *It is moved by Fischelis that the tentative program submitted by Secretary Day be approved by the Council.*

76. Deferring of Research Grant: The following communications have been received from Dr. Arny, Chairman of the Committee on Pharmaceutical Research:

"Chairman, H. V. Arny,
115 West 68th St.,
New York, N. Y.

Dear Mr. Chairman:

"On behalf of Dr. Macht and myself, I am taking the liberty of requesting the National Research Council to permit a deferring of the payment of our grant, awarded at the Buffalo meeting, until the first of next October.

"This request is made in view of the fact that since September 1st, Dr. Macht has been seriously ill, and in the absence of Professor Abel, Head of the Department of Pharmacology of the Johns Hopkins University, I have been unable to have access to the laboratory in which this work is being done. However, Dr. Macht expects to be able to recontinue this work in October.

"I sincerely hope that this will meet with your approval.

Very truly yours,
(Signed) JOHN C. KRANTZ, JR."

"Dear Dr. Fischelis:

"Enclosed find letter just received from Dr. Krantz, one of the recipients of the grants from the A. PH. A. Research Fund awarded at the Buffalo meeting.

"Dr. Krantz is merely asking that the grant made to Dr. Macht and himself be permitted to remain in the Association treasury until next October, when it is hoped that Dr. Macht will be in condition to take up research once more.

"This request seems to me so reasonable that I have no hesitation in requesting the Council to act favorably upon the proposition; hence *I move that the Council approve of the request of payment on the grant of $300.00 awarded at the Buffalo meeting jointly to him and Dr. D. I. Macht, be deferred until next October.*

Cordially yours,
H. V. ARNY."

(*Motion No. 38.*) *It is moved by Arny that the Council approve that the request of payment on the grant of $300.00 awarded at the Buffalo meeting jointly to J. C. Krantz and Dr. D. I. Macht, be deferred until next October.*

77. Applicants for membership: The following applications accompanied by first year's dues and proper endorsements have been received.

No. 255, Joseph Seller, 35 Harrison Ave., Brooklyn, N. Y.; No. 256, Frank L. Hunt, c/o Johnson & Johnson, New Brunswick, N. J.; No. 257, Julia A. Woertz, 13 So. 13th St., Philadelphia, Pa.; No. 258, Edw. M. Altman, 72 Carroll St., New Bedford, Mass.; No. 259, Hesse Baer, 1814 Montana St., Los Angeles, Calif.; No. 260, Carolina C. Bianchi, 98 Lincoln Park, Longmeadow, Mass.; No. 261, Donald Glen Boland, Wood St., Lowellville, Ohio; No. 262, Robert W. Bond, 4121 Smith Ave., Cleveland, Ohio; No. 263, John A. Bracco, 1026 So. Alrardo St., Los Angeles, Calif.; No. 264, Carl F. H. Buetzow, 712 Armandale Ave., Pittsburgh, Pa.; No. 265, Earl E. Cappell, 433 Edgemont St., Pittsburgh, Pa.; No. 266, Christiana Clements, 1221 Rebecca St., Wilkinsburg, Pa.; No. 267, Joseph R. Conroy, 119 Mill St., Coraopolis, Pa.; No. 268, Jerry Jos. Conway, 1125 Edson Ave., Johnstown, Pa.; No. 269, John Paul Conway, 1125 Edson Ave., Johnstown, Pa.; No. 270, Samuel Doan, 254 Harrison St., Paterson, N. J.; No. 271, Sterling C. Edwards, 213 South Ave., Wilkinsburg, Pa.; No. 272, Robert Lee Erwin, 421 Stokes Ave., North Braddock, Pa.; No. 273, Louis Botta Franchina, 3070 E. 123rd St., Cleveland, O.; No. 274, Harold V. George, 529 Linden Ave., Johnstown, Pa.; No. 275, Anthony Gentile, 210 Locust Way, Homestead, Pa.; No. 276, Joseph H. Goodness, Cherry Valley, Mass.; No. 277, Arthur Wm. Harvey, 3923 Shoreham St., Pittsburgh, Pa.; No. 278, Thaddeus James Hayden, 1416 Carson St., Pittsburgh, Pa.; No. 279, George H. Herb, 245 S. Winibiddle Ave.,

Pittsburgh, Pa.; No. 280, Nimr B. Hobica, 237 Chestnut St., Lawrence, Mass.; No. 281, Carl C. Hoffman, 717 Maple St., Coraopolis, Pa.; No. 282, Winton R. Hoffman, 528 Franklin Ave., Woodlawn, Pa.; No. 283, Claude B. Hood, 539 Allegheny Ave., Oakmont, Pa.; No. 284, Bradley H. Kirschberg, 317 Clinton St., Schenectady, N. Y.; No. 285, Fred A. La France, Cresson, Pa.; No. 286, Malcolm J. MacLeod, Frambaise, Nova Scotia, Canada; No. 287, Louis Markowitz, 1017 Talbot Ave., Braddock, Pa.; No. 288, Clifford H. Marks, Fairview Ave., Bellview, Pittsburgh, Pa.; No. 289, Frank S. McGinnis, 1315 Woodward Ave., McKees Rocks, Pa.; No. 290, Wm. Rust Neville, Jr., University of Texas, Galveston, Texas; No. 291, Joseph Francis Palchak, 1224 Halket Terrace, Braddock, Pa.; No. 292, J. Anthony Piroch, 73 Francis Ave., Lyndona, Pa.; No. 293, Daniel M. Poad, 408—10th Ave., Homestead, Pa.; No. 294, Chas. G. Poorman, Derry, Pa.; No. 295, Ralph Scott Rainey, 5th & Merchant Sts., Ambridge, Pa.; No. 296, Lawrence Meyers Rickard, 308 Broadway, Meyersdale, Pa.; No. 297, Chas. A. Rouse, 301 Fifth St., West Newton, Pa.; No. 298, Morris Edw. Rothman, 2732 Breckenridge St., Pittsburgh, Pa.; No. 299, Albert Thos. Schmid, 817 Holland Ave., Wilkinsburg, Pa.; No. 300, Evan Robert Shaffer, 818 Main St., Windber, Pa.; No. 301, Geo. A. Sharp, Jr., 1133 Sheffield St., Pittsburgh, Pa.; No. 302, Ralph McKinley Sickman, 211 Knox Ave., Mt. Oliver Sta., Pittsburgh, Pa.; No. 303, Jackson S. Smith, 5742 Pierce St., Pittsburgh, Pa.; No. 304, Rudolph John Sowko, 6 Market St., Brownsville, Pa.; No. 305, Harry Daniel Strauss, 701 Arch St., Pittsburgh, Pa.; No. 306, Paul Peter Thomas, 69 Allen Ave., Pittsburgh, Pa.; No. 307, Harry Weinburger, 452—3rd Ave., Homestead, Pa.; No. 308, Stephen Wilson, 1216 So. Mill St., New Castle, Pa.; No. 309, George Wolinsky, 44 Depot Ave., Greensburg, Pa.; No. 310, Louis Wm. Yagle, 7145 Monticello St., Pittsburgh, Pa.; No. 311, E. H. Hance, Jr., 623 Callowhill St., Philadelphia, Pa.; No. 312, Samuel Solomon Goldstein, 543 Madison St., Brooklyn, N. Y.

(*Motion No. 39.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

78. Applicants for membership who have contributed to Building Fund: The following nonmembers of the A. PH. A. have pledged a total of $25 or more to the building fund and have made a cash payment of $5 or more and they are therefore entitled to membership in the A. PH. A.

H-380, Theodore C. Boenau, 159—7th Ave., Brooklyn, N. Y.; H-381, Francis Circelli, 1082 Halsey St., Brooklyn, N. Y.; H-382, Dante Cennerazzo, 31½ Mt. Vernon Ave., Mt. Vernon, N. Y.; H-383, Jacob Abromowitz, 4124 Fourth Ave., Brooklyn, N. Y.; H-384, Leslie H. Goslin, 109 Bluff St., Streaton, Ill.; H-385, Lee M. Bingham, 135 Christopher St., New York City; H-386, Kaspar C. Gruss, 677 Evergreen Ave., Brooklyn, N. Y.; H-387, Meyer Schleyen, 84 Humboldt St., Brooklyn, N. Y.; H-388, Isidore Schaffer, Needville, Texas; H-389, Alexander M. Hepburn, 103 Main St., Flushing, N. Y.; H-390, Jacob Harkovy, 1000 E. 179th St., New York City; H-391, Wright Wm. Fountain, 607 Botetourt St., Norfolk, Va.; H-392, Geo. D. Bancroft, 948 Bergen St., Brooklyn, N. Y.; H-393, Irving L. Seloff, 1566 Minford Pl., New York City; H-394, Lorenzo Beeler, Hazard, Ky.; H-395, Leonardo Bochicchio, 7124 15th Ave., Brooklyn, N. Y.; H-396, Nicholas Caggiano, 793 Bedford Ave., Brooklyn, N. Y.; H-397, Louis P. Costa, 305 E. 112th St., New York City; H-398, Morris Dimiceli, 242 Wilson Ave., Brooklyn, N. Y.; H-399, Samuel E. Elkin, 1985—2nd Ave., New York City; H-400, Samuel H. Federman, 721 Amsterdam Ave., New York City; H-401, Eugene M. Fletcher, 3 S. Park Place, Newark, N. J.; H-402, Joseph Freilich, 1882—3rd Ave., New York City; H-403, Nathan Friedman, Delmar at Union Blvd., St. Louis, Mo.; H-404, Walter J. Garner, 30 Nassau St., Princeton, N. J.; H-405, Maxwell Gichman, 600 West 135th St., New York City; H-406, Harry A. Gordon, 2137 Cropsey Ave., Brooklyn, N. Y.; H-407, A. E. Gusman, 2236 Pitkin Ave., Brooklyn, N. Y.; H-408, Bert J. Hooper, Lake Villa, Ill.; H-409, Meyer Isaacs, 895 Gates Ave., Brooklyn, N. Y.; H-410, R. Earle Jones, Clinton & St. Clair Sts., Newark, N. J.; H-411, Geo. H. Lawlor, 1401—60th St., Brooklyn, N. Y.; H-412, Benjamin Levine, 199 Howard Ave., Brooklyn, N. Y.; H-413, Maurice S. Loewenstein, 2299—7th Ave., New York City; H-414, George Mann, 788 Driggs Ave., Brooklyn, N. Y.; H-415, Geo. Malkin, 211 St. Ann's Ave., New York City; H-416, Carl Marlis, 1195 Bushwick Ave., Brooklyn, N. Y.; H-417, William J. McGuire, 147 Sands St., Brooklyn, N. Y.; H-418, Benj. L. Milana, 319–21 Myrtle Ave., Brooklyn, N. Y.; H-419, Max Mittleman, 175 St. Nicholas Ave., New York City; H-420, Samuel Moskowitz, 194 St. Ann's Ave., New

York City; H-421, Harry Peltzman, 2906—8th Ave., New York City; H-422, Carmine C. Pugliese, 2146—2nd Ave., New York City; H-423, Vincent A. Risafi, 319–21 Myrtle Ave., Brooklyn, N. Y.; H-424, Joseph Stern, 1020 Westchester Ave., New York City; H-425, Nicholas Tow, 483 Brook Ave., New York City; H-426, Joachim Vedeler, 2200 Riverside Ave., Minneapolis, Minn.; H-427, Schaia Wallman, 914 S. Claremont Ave., Chicago, Ill.; H-428, Anthony L. Ajello, 138 President St., Brooklyn, N. Y.; H-429, Vincent Barone, 2183 Second Ave., New York City; H-430, Ralph M. Gigante, 4430 Third Ave., New York City; H-431, Donata Lamonaca, 210 Union Ave., Brooklyn, N. Y.; H-432, Albert J. Reichenbach, 436 Eighteenth St., Brooklyn, N. Y.; H-433, Edward Orler, 336 Quincy St., Brooklyn, N. Y.; H-434, Louis Safyan, 542 Tenth Ave., New York City; H-435, L. Edward Seiberlich, 175 W. 7th St., St. Paul, Minn.; H-436, James D. Yordan, 206 E. 102nd St., New York City.

(*Motion No. 40.*) *Vote on applications of contributors to building fund, for membership in the American Pharmaceutical Association.*

79. Applicants for Life Membership: Under the provision made by the Board of Directors of the A. PH. A. at a meeting held in Washington, D. C., December 7, 1923, a contributor to the Building Fund who subscribes $1000 or more is entitled to life membership. The following applications are submitted under this provision.

L. M. No. 26, Harry B. Mason, c/o Parke, Davis & Co., Detroit, Mich.; L. M. No. 27, Frank C. Waterbury, 132 E. Locust St., Des Moines, Ia.

(*Motion No. 41.*) *Vote on applications for Life Membership in the American Pharmaceutical Association.*

ROBERT P. FISCHELIS,
Secretary of the Council.

OFFICERS CONNECTICUT PHARMACEUTICAL ASSOCIATION.

The Connecticut Pharmaceutical Association at its 49th annual meeting held June 25–26, elected the following officers: *President,* Herbert C. Hodge, East Hampton; *First Vice-President,* James W. Lynch, Hartford; *Second Vice-President,* F. W. Lake, Waterbury; *Secretary-Treasurer,* P. J. Garvin, New Haven.

Curtis P. Gladding, *Chairman* of the Committee on Connecticut College of Pharmacy, submitted an encouraging report.

ILLINOIS PHARMACEUTICAL ASSOCIATION.

President Fred L. Pfaff in his address recommended the inclusion of three vice-presidents on the executive committee, and a more thorough organization for legislative purposes. The Secretary reported a total membership of 1,962.

The following officers were elected for the ensuing year: *President,* Lee M. Pedigo, Chicago; *First Vice-President,* J. B. Mitchels, El Paso; *Second Vice-President,* E. D. Hirschy, Kewanee; *Third Vice-President,* John A. Mahaffy, Chicago; *Secretary,* W. B. Day, Chicago; *Treasurer,* George M. Bennett, Urbana.

MARYLAND PHARMACEUTICAL ASSOCIATION.

Maryland Pharmaceutical Association, at its meeting in Buena Vista Springs, decided to establish a monthly pharmaceutical journal, of which R. L. Swain of Baltimore was named Editor. President Webster K. Edward, heartily endorsed the American Pharmacy Headquarters.

The following officers were elected for the ensuing year: *President,* Samuel Y. Harris, Baltimore; *First Vice-President,* H. A. B. Dunning, Baltimore; *Second Vice-President,* L. L. Kimes, Cumberland; *Third Vice-President,* A. M. Howing, Baltimore; *Secretary,* E. F. Kelly, Baltimore; *Treasurer,* George P. Hetz, Baltimore. *Members of the Executive Committee:* C. C. Neal, Baltimore; R. E. L. Williamson, Baltimore; A. L. Lyon, Havre de Grace; C. L. Meyer, Baltimore, and W. L. Edwards, Cumberland.

DES MOINES LADIES' AUXILIARY INVITATION.

On behalf of the Ladies' Auxiliary of the Poke County Druggists' Association, the President, Mrs. J. J. Gillespie, extends a cordial invitation to all ladies of the American Pharmaceutical Association to attend the convention in Des Moines during the week of August 24.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Members of the Council, A. PH. A.: JAMES H. BEAL, *Chairman;* S. L. HILTON, *Vice-Chairman;* ROBERT P. FISCHELIS, *Secretary;* CHARLES H. LAWALL, HENRY M. WHELPLEY, H. V. ARNY, A. G. DUMEZ, CHARLES E. CASPARI, W. L. SCOVILLE. *Ex-Officio:* CHARLES W. HOLTON, President; Vice-Presidents, PAUL S. PITTENGER AND WILLIAM MANSFIELD; WILLIAM B. DAY, Secretary; E. F. KELLY, Treasurer; W. BRUCE PHILIP, Chairman of the House of Delegates. Editors of the JOURNAL and YEAR BOOK: E. G. EBERLE AND A. G. DUMEZ. Committee on Publications: R. P. FISCHELIS, *Chairman;* H. V. ARNY, PAUL S. PITTENGER, E. F. KELLY, WM. B. DAY, A. G. DUMEZ, E. G. EBERLE.

Collaborators: The members of the Council; the Editor of the YEAR BOOK, A. G. DUMEZ; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.: PAUL S. PITTENGER, WILLIAM MANSFIELD, JOHN C. KRANTZ, JR., R. S. LEHMAN; W. BRUCE PHILIP, Chairman of the House of Delegates, A. PH. A.; W. H. ZEIGLER, President A. C. P. F.; CHARLES B. JORDAN, Chairman Executive Committee, A. C. P. F.; H. LIONEL MEREDITH, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

UNTIED—UNITED.

Publicity Director E. L. Newcomb says the drug interests of the country have realized that there is need for federation—the same letters —Untied, United—signify past and present conditions, *i. e.*, as they are to be. He says retail druggists are not so much concerned relative to the national pharmaceutical library and museum nor, perhaps, the research laboratory—essential requirements of the Headquarters—but they are vitally interested in any move which will help to combine, concentrate, and centralize the present divided power and influence of American pharmacy. The drug industry is represented at the present by no less than ten national organizations, each one of these is important and renders a valuable service. Each of these national organizations must be conserved, strengthened, and further developed. Each of these national organizations has specific problems for solution. On the other hand, the big problems confronting American Pharmacy are problems which affect more or less directly each one of the great branches of the drug business.

RETAILERS GIVE $275,000.00.

The support which has been accorded to the All-Pharmacy Building project by the retail druggists of the United States up to the present time will stand out as one of the great achievements of American Pharmacy. Over $275,000.00 have been subscribed by the retail drug interests of the country, and this amount is being rapidly increased through subscriptions by individuals and associations. Retailers are challenging the wholesalers and manufacturers for the successful completion of the project.

When manufacturers and wholesalers hand out $100 checks for projects of this kind, everyone knows that such contributions represent compliments and do not evidence a real serious belief, interest and concern therein. Since Pharmacy Campaign Day, manufacturers have not only sent in many splendid subscriptions but several have indicated their intention of raising earlier subscriptions. Such subscriptions show that these men have given the matter serious consideration and believe that the problems of pharmacy require united action.

State associations are making up their quotas, cities are making strong efforts to complete their subscription before the Des Moines meeting, at which time a session will be given over to all matters pertaining to the Headquarters.

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has issued Bulletins C-27 to C-29, inclusive, of the Drug Trade Bureau of Public Information.

Bulletin C-27 relates to disclosures of the activities of diploma mills, and the efforts of Dean Frederick J. Wulling to have character tests applied to those engaged in the drug business and those entering upon the study of pharmacy. The paper referred to by Dean Wulling is printed in the January JOURNAL, page 52.

Bulletin C-28 relates to the enforcement of

anti-narcotic laws, and also drug market conditions, as brought out at the meeting of the American Drug Manufacturers' Association.

Bulletin C-29 has reference to business training of pharmacists, as presented in the paper by Dean Theodore J. Bradley of the Massachusetts College of Pharmacy, and published in the JOURNAL for May, on page 430.

DISPENSING OF BIOLOGICALS BY PHARMACISTS.

Much has been written in an effort to impress the need of retaining the sale of biologicals by pharmacists. Giving up a line usually means more than the loss of the immediate sales involved. If biologicals are dispensed in physicians' offices, it means that office dispensing is extended and the prescription department of the average drug store becomes of lesser importance and pharmacy also to that extent. These products must be handled properly, and this obtains with all articles dispensed and sold by pharmacists.

Chairman Samuel S. Dworkin, 151 St. Anns Ave., Bronx, N. Y., is sending out communications for the purpose of ascertaining the number of pharmacists carrying biologicals. It is hoped that all pharmacists will promptly reply to this communication so that this important part of the business may receive proper attention. The expense of sending out the post cards is considerable and requires time; prompt replies will therefore be appreciated, because it means conservation of time and money to the committee and particularly to the Chairman. If you have not replied hunt up the card, *fill it out and mail it to-day.*

RATES AND ROUTES TO DES MOINES MEETING OF AMERICAN PHARMACEUTICAL ASSOCIATION.

Please refer to page 562 of the June JOURNAL for rates and routes to the Des Moines meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION. You will notice a reference to the convention plan. Advantage of that will not be given unless 250 certificates are secured on the certificate plan. Everyone going to Des Moines should make it a point to secure a "convention plan" ticket to Des Moines. The distance does not make any difference, but the certificate rate cannot be obtained unless a total of 250 certificates are secured. The fare from Chicago to Des Moines is $12.89; a lower berth costs $3.75; upper $3.50; compartment $10.50; drawing room $13.50.

The main point of this second notice relative to rates is to request everyone to buy tickets to Des Moines on the certificate plan, and to see the railroad agent in time so that he will be advised relative to the convention.

IOWA PHARMACEUTICAL ASSOCIATION WILL BROADCAST FROM "WHO," DES MOINES, IOWA.

On the evening of August 17 about 8 P.M. the Iowa Pharmaceutical Association will broadcast from Station WHO Bankers Life of Des Moines, Iowa, a special and cordial invitation to every druggist and pharmacist in the United States to attend the sessions of the AMERICAN PHARMACEUTICAL ASSOCIATION to be held in Des Moines, Ia., during the week of August 24. All druggists and their friends are urged to tune in on this occasion and receive this personal invitation.

The Wave length of WHO is 526 meters.

TESTIMONY ON JOHN T. SCOPES' CASE WILL SERVE FOR REFERENCE.

Some scientists may lose standing and others may gain through the judge's charge. Among the scientists who have been named in connection with the Scopes' case are the following: Dr. Henry Fairfield Osborn, research professor of zoölogy, Columbia University; Dr. Edwin Conklin, professor of biology, Princeton University; Arthur M. Miller, professor of geology, University of Kentucky; Henry Higgins Lane, professor of zoölogy, University of Kansas; Dr. Edward L. Rice, professor of biology, Ohio Wesleyan University; Dr. J. G. Lipman, biologist, Rutgers College; Dr. Ward J. MacNeal, chief biologist of the Postgraduate Medical School, New York City; Michael Pupin, professor of electro-mechanics, Columbia University; Prof. Kirkley F. Mather, chief of the department of geology, Harvard University; Prof. L. F. Rettger, biologist of Yale University; Prof. Maynard M. Metcalfe, zoölogy department, Oberlin College.

PHARMACY LABORATORY SEMINAR OF 1925.

We are just advised that the Pharmacy Laboratory Seminar has been continued this year as an organized feature of the American Conference of Pharmaceutical Faculties. Program of the Seminar will appear in the August issue. The Chairman is Prof. E. Fullerton Cook, 145 North 10th Street, Philadelphia, and the Secretary, Prof. John C. Krantz, Jr., Lombard & Greene Streets, Baltimore.

Hotel Fort Des Moines, and Main Lobby, where the Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION and bodies meeting with them will be held.

HARRISON MEMORIAL MEDAL.

The Adjudicating Committee of the British Pharmaceutical Society, appointed under the terms of the trust deed, has resolved to award the medal in July of each year. The medal in silver is to be awarded for the paper by a qualified pharmacist of not more than five years' standing, deemed by the committee to be the most important contribution to the chemistry of drugs during the year ending June 30, 1925. The medallist will also receive a prize of books or apparatus. Applications must be lodged with the Secretary to the Adjudicating Committee, 17, Bloomsbury Square, W. C. 1, London, not later than July 13 next, together with the papers to be considered, or reference to contributions already published during the year.

EXHIBITS OF THE NATION'S MATERIAL GROWTH.

The *New York Times* of June 21 comments editorially on a meeting in New York City during the week of June 15, when definite steps were taken for the establishment of museums under the aegis of the Smithsonian Institution. Reference to the movement was made in the June JOURNAL, p. 557. The plan contemplates sectional museums—at Chicago for example relating to the progress of agriculture, at Pittsburgh of the steel industry, etc. This indicates the possibilities for pharmacy through its Headquarters.

ESTIMATION OF GLYCERIN.

For the quantitative estimation of glycerin quite a number of methods have been recommended, amongst others the well-known acetine method and the Hehner's oxidation method. Strebinger and Streit recommend the use of potassium iodate and sulphuric acid as oxidizing agents, the reactions taking place according to the equations: $6KIO_3 + 3H_2SO_4 = 3K_2SO_4 + 3H_2O + 3I_2 + 15O$

$$2C_3H_8O_3 + 7O_2 = 6CO_2 + 8H_2O$$

The process is carried out by adding to the accurately weighed amount of glycerin, an accurately weighed excess of potassium iodate and an excess of strong sulphuric acid. The mixture is then heated and after the reaction has ceased is diluted with water and, after having boiled off the iodine, potassium iodide is added and the iodine liberated by the not consumed iodate is titrated in the usual way. The results obtained by this method are claimed to be very satisfactory.—*Pharm. Weekbl.*, LXII, 227, through *Drug. Circ.* for June.

A. PH. A. MEMBERSHIP PRIZES BY COLLEGES OF PHARMACY.

The JOURNAL OF THE A. PH. A. will be pleased to print the names of nominees for membership in the Association of the schools and colleges of pharmacy.

The Philadelphia College of Pharmacy and Science, through Professor Ivor Griffith, awarded a membership as Pharmacy Review prize, to Miss Sadie Brisgol.

The University of Illinois School of Pharmacy awarded A. PH. A. membership in Pharmacy, to Robert M. Riley; in Materia Medica, to Vernon O. Anderson; in Chemistry, to Albert N. Almond; the William Gray membership, to Jules X. Rivard.

Pittsburgh College of Pharmacy awarded A. Ph. A. memberships as follows: For Theoretical Pharmacy, to Joseph Reising; Chemistry, to Joseph A. Kist; Pharmaceutical Products, George H. Herb; Pharmacognosy, to Charles H. Hyde; Materia Medica, to Bernard Daubert.

The New Jersey College of Pharmacy awarded A. PH. A. membership prize for Theoretical Pharmacy, to Samuel Doan; the Pharmacognosy prize to Ishua I. Seidman.

PERSONAL AND NEWS ITEMS.

Dr. Harvey W. Wiley says that the Pure Food Law is hampered by restrictions. He desires to create an interest that will restore the law to the activities which Congress intended it should engage in; that the competent officials of the Department of Agriculture may be led by the facts of the case and by a sense of duty to the public to cancel all orders, decisions, regulations and everything of this kind which, under the present conditions, prevent the full and complete enforcement of the act itself.

Professor W. E. Dixon, of Cambridge, England, who was a member of the Food Preservatives Committee, and is a member of the British Pharmaceutical Society's Science Committee, lecturing on March 25 on "Food Preservation and Adulteration" before the People's League of Health, stated that in animals "Bright's disease is caused by a diet containing boron preservatives. It is not known whether boron acts similarly on man, but its use in foods is certainly responsible for a large proportion of renal diseases. It had been proved that such preservatives could be

dispensed with. They stopped putrefaction, but did not destroy the unseen danger, namely, pathogenic organisms."

F. A. Upsher Smith is in England for a two month's stay. He expects to attend the annual meeting of the British Pharmaceutical Conference, in Glasgow, and return to Minneapolis about September 1.

M. Dorveaux publishes in the *Bulletin of the History of Pharmacy* some biographical notes on Mitouart fils, the Parisian pharmacist who possessed the brain of Voltaire, the discovery of which was discussed in the Paris press a few months ago. Mitouart, in his youth an assistant in Deyeux's laboratory of pharmaceutical chemistry, qualified in 1800, and kept open shop in the rue Coquillière till 1817. In 1823 he became a member of the Academy of Medicine, and in the following year started a new business in the rue des Cinq-Diamants, which he sold in 1830. He then became head pharmacist of the Maison Royale de Santé (the municipal hospital in the Faubourg St. Denis, now known to Parisians as the Maison Dubois) until 1837. He died in 1848, aged 82.—The *Chemist and Druggist*, June 13, p. 842.

The home of Humphrey Marshall, America's second botanist, near West Chester, Pa. (Marshallton, formerly West Bradford), is still standing. A grove of rare trees remains. He was born near this place in 1722 and died in the house, still standing, in 1801. The gardens were established about 1773.

Samuel S. Dworkin, who has been an active worker in the Bronx Pharmaceutical Association for a number of years, at a meeting of that organization on May 19th, was presented with a Zeiss microscope in appreciation of his services. Mr. Dworkin is chairman of the committee on commercial interests of the New York State Pharmaceutical Association. He has been active in proper handling of biologicals and in an effort to have the dispensing of them retained by pharmacists.

R. G. Pankow addressed the Virginia Pharmaceutical Association on "Salesmanship," stressing the important points; among them a knowledge of the goods to be sold, proper handling and confidence in the quality and merits of the articles. The subject was well presented and the speaker held the attention of the members throughout.

The veteran pharmacist, **Joseph L. Lemberger,** and **Dr. Frederick B. Kilmer** were elected to honorary membership in the Pennsylvania Pharmaceutical Association.

Clinton W. Gilbert, in the "Daily Mirror of Washington," says of General Andrews that he is a man of larger vision than his predecessors. "He won't lose sight of the big things for the little things. And he does not seem to be worrying much, because on the one side he faces the fiercest fanatics, who may come to hate him because he is not a fanatic, and because on the other side are the cleverest, best-organized and richest band of crooks who ever got together to render a law void. In the midst of it all he can stop and talk gayly and honestly about his job, with a large understanding of its implications, as if there were not dangerous enemies just outside his door."

C. P. Van Schaack, wholesale druggist of Chicago, left this week for a visit to Iceland and from there to Europe. He will make short stays at Copenhagen, Christiana, Amsterdam and London. He is accompanied by his son Cornelius.

The pharmacists participating in the trip to Europe under direction of Editor **Hugo Kantrowitz** sailed on the "Cleveland" July 9. Nearly 100 pharmacists, including members of respective families, will make the tour in Europe, some having preceded. Their badges have the monogram A-Z (*Apotheker-Zeitung*). Editor **Kantrowitz** hopes the journey will be a success from A to Z, and friends join in the wish. The numbers of the year $1 + 9 \times 2 + 5 = 100$ and gives further assurance.

Wilhelm Bodemann, veteran and secretary of Chicago Veteran Druggists' Association, has entered on his eightieth year, hale and hearty and interested in things worth while. Wishes for continued health for several more decades are extended.

C. J. McCloskey has been appointed member of the New Jersey Board of Pharmacy. Mr. McCloskey is a member of the Board of Trustees of New York College of Pharmacy and subchairman of the All-Pharmacy Headquarters Campaign for Hudson County.

John Frederick Lewis, Historian, delivered the Commencement address for Philadelphia College of Pharmacy and Science. It was comprehensive, and the lines of thought followed the progress of arts and sciences from remote periods to the present day.

Caswell A. Mayo, accompanied by his two daughters, Pamela and Phyllis, attended the wedding, June 27, of Miss Marjorie Ruediger of Montclair, N. J. The young ladies are cousins.

President Eemeritus, Edmund J. James, of the University of Illinois, died June 19, aged seventy years. He had been a resident of Covina, Cal., since 1921.

Prof. Ivor Griffith is scheduled to succeed **Prof. Charles H. LaWall** as professor of Organic Chemistry in the Wagner Free Institute of Science, Philadelphia. Professor LaWall succeeded Dr. Henry Leffmann at the Institute sixteen years ago.

Prof. Ralph R. Foran has accepted a responsible position on the chemical staff of the Powers Weightman Rosengarten Company at their control laboratory in Philadelphia.

OBITUARY.

FRED LOUIS CARTER.

Fred L. Carter, member of the American Pharmaceutical Association since 1905, died in Los Angeles, June 24, aged seventy-five years. The deceased was a past-president of the National Wholesale Druggists' Association. He was born in Boston, October 30, 1849; at the age of 18 years he entered the employ of Carter and Wiley; in 1879, he was admitted to the firm of Carter, Carter & Kilham, which later became the corporation of Carter, Carter & Meigs Company, and retired from active business in 1919.

Mr. Carter was an authority on State and National laws relating to the drug business. He was for many years secretary of New England Drug Exchange, active member of the Boston Druggists' Association, and of the National Wholesale Druggists' Association.

Mrs. Carter and a son, Fred L. Carter, Jr., survive the deceased. Interment was made at Cambridge, Mass.

EDWIN FREMONT LADD.

Senator Edwin F. Ladd of North Dakota died June 22, aged 65 years. The deceased was an alumnus of the University of Maine, for a number of years member of the faculty of North Dakota Agricultural College and dean of the School of Chemistry and Pharmacy, also president of the College.

Dr. Ladd was instrumental in securing the passage of a State law, compelling fertilizer manufacturers to label their products with the name and proportion of each ingredient. He helped give the State a pure-food law, a strong drug and patent medicine law; what is said to be the best paint law in the country, a cold storage law, an honest advertising law and an effective sanitary inspection law.

Mrs. Ladd, nee Rizpah Sprogle, and eight children survive the deceased.

SOCIETIES AND COLLEGES.

AMERICAN PHARMACEUTICAL ASSOCIATION.

For program of AMERICAN PHARMACEUTICAL ASSOCIATION see "Association Business;" for American Conference of Pharmaceutical Faculties, National Association of Boards of Pharmacy, and Seminar, see "Department of American Conference of Pharmaceutical Faculties."

A Pharmacy Laboratory Seminar has also been provided for.

REPORT ON HEADQUARTERS CAMPAIGN AT THIRD GENERAL SESSION, A. PH. A.

1. Report by Chairman J. H. Beal, of the Headquarters Building Committee.
2. Report by Chairman, H. A. B. Dunning, of Pharmacy Building Campaign Committee.
3. Report by Publicity Director, E. L. Newcomb.
4. Five minute talks by leaders in manufacturing, wholesale, retail and teaching pharmacy throughout the United States on the Headquarters Building movement and its relation to the progress of the different branches of American Pharmacy.

HOTEL RATES DURING A. PH. A. CONVENTION IN DES MOINES.

Fort Des Moines Hotel will be Headquarters for the A. Ph. A. Convention. The rates are:

One person, $4.00 and up.
Two persons, $5.00 and up.
Twin bedrooms, $6.00 and up.
All rooms with baths.

The Savery Hotel has the same rates.

The rates of the Chamberlain Hotel are $1.75 and up, without bath; $2.00 and up, for rooms with bath.

Des Moines has quite a number of hotels with rates from $2.00 up.

SCIENTIFIC SECTION.

Contributions promised are as follows:

A. R. Bliss, Jr., Activity (anthelmintic) of Western Oils of Chenopodium.

Geo. L. Keenan, Iron by Hydrogen.

E. A. Ruddiman, C. F. Lanwermeyer: Toxicity of Quinine Aspirin Mixture on Warm Blooded Animals.

Dr. John A. Murphy, Pollen (Hay Fever) and Protein Tests with Demonstration.

Dr. Chas. C. Haskell, Caffeine as an Antidote for Hydrated Chloral; and The Action of Caffeine on the Poisoned Heart.

John C. Krantz, Jr., Neil E. Gordon: The Effect of Changes of Hydrogen Ion Concentration upon Emulsions.

Geo. D. Beal, M. C. T. Katti: Some Notes on the Gravimetric Determination of Emodin and Allied Substances in Cathartic Drugs; The Oil of Pongami Glabra.

PAUL S. PITTENGER, *Chairman,*
5250 Market St., Philadelphia.
F. F. BERG, *Secretary,*
17 Columbia Heights, Brooklyn.

SECTION ON EDUCATION AND LEGISLATION.

DEAR FELLOW MEMBER:

This letter is both an invitation and a plea. It invites you to make the Section on Education and Legislation the medium through which you present a paper to the delegates at the Des Moines meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION on August 24–29. It pleads with you to take a personal interest in the Section to the end that this division of the Association may assume once more the prominent place it used to hold in the esteem of the membership.

Education and Legislation are vital subjects, and they embrace such a wide territory and comprehend so many matters of moment to pharmacy that I am certain you can present an instructive paper on one or the other of these two domains covered by the Section. Many papers have recently been going before other branches of the A. PH. A. that justly belonged to the Section on Education and Legislation.

If you can possibly do so, please send me the title of your paper right away so that it may appear in the printed program of the meeting. If you are delayed in sending the title, please forward it to Editor E. G. Eberle, 253 Bourse Building, Philadelphia, and specify that it must appear on the program of our section. If you cannot go to Des Moines, I will be glad to read your paper for you.

We need your assistance this year. We are going to have an attractive program, but you can add interest to it by your contribution.

(Signed) J. G. BEARD, *Secretary.*

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The following papers have been promised:

Edward Kremers, Decolorized Tincture of Iodine.

John C. Krantz, Jr., Manuel J. Vidal: The Effect of Certain Amides on the Stability of Modified Dakin's Solution; A Note on the Assay of Mass of Ferrous Carbonate.

SECTION ON HISTORICAL PHARMACY.

DEAR FELLOW MEMBER:

The subjects of Historical Pharmacy and Pharmaceutical History are of extreme interest and importance to all branches of our calling, and the discussion of the same should be of equal rank with that of the many other subjects brought to the attention of the members of the AMERICAN PHARMACEUTICAL ASSOCIATION at its annual meetings.

Knowing of your long experience in matters pharmaceutical, we are quite positive that you are in possession of many historical facts that are of great interest, and we are herewith asking you to contribute a paper on historical subjects to our section.

Whether the same is short or long, serious or humorous, or whether you intend to be present at the Des Moines meeting or not, will in no way detract from the welcome which your contribution will receive at the hands of the Section on Historical Pharmacy.

ROBERT S. LEHMAN, *Chairman,*
98a Reid Avenue, Brooklyn, N. Y.
LEASURE K. DARBAKER, M.D., *Secretary,*
7025 Hamilton Street, Pittsburgh, Pa.
EUGENE G. EBERLE, *Historian,*
253 Bourse Bldg., Philadelphia, Pa.

INTERNATIONAL PHARMACEUTICAL FEDERATION.

The General Secretary's Office,
Schenkweg, 4,
The Hague, Holland.

To the AMERICAN PHARMACEUTICAL ASSOCIATION,
Chicago, Ill., U. S. A.

GENTLEMEN:

We take pleasure in advising you that in accordance with the SWISS SOCIETY of PHARMACY the date of the General Assem-

bly of the International Federation is fixed for July 21st and 23rd.

The Bureau of the Federation will meet in LAUSANNE, Switzerland, on July 20th.

The General Assembly will be held in LAUSANNE on July 21st, in the University of that city, and on July 22nd in VEVEY, in the Hotel Mont Pelerin.

On July 23rd, the Members of the Congress are invited to a visit by steamboat to GENEVA.

The program of the Assembly, which will be sent to the Delegates within a few days hence, with the proceedings of the session of the Bureau in Paris and the reports of the Commission, is as follows:

Monday, July 20th. 2.30 P.M. Session of the Bureau.

Tuesday, July 21st. 10 A.M. General Assembly (to be continued in the afternoon).

1. Regulation of specialties.
2. International nomenclature.
3. Traffic in stupefactives and poisons in general.
4. Pharmacy in the small communities.
5. Proposition of the Bureau to found two sections of the International Pharmaceutical Federation: one professional section and one scientific section.
6. Proposition of the Bureau to have an International Correspondence Journal appear every three months and to appoint correspondents in every country.
7. Propositions of the effective Members.
8. International scientific questions:

The unification of methods of determining the value of drugs and other medicaments.

Wednesday, July 22nd. International scientific question (continuation).

Prof. Eder, Zürich. Subject: "A New Method of Determining Morphine in Opium" (in German).

Prof. Greenish, London. Subject: "Unification of the Methods of Assaying Potent Drugs" (in English).

Prof. Tschirch, Berne. Subject: "The Scientific Bases of Galenic Pharmacy" (in German).

Prof. Wilczek, Lausanne. Subject: "Anatomical Particulars on the Bark of Frangula" (in French).

Dr. Golaz, Vevey, and Dr. Siegfried, Zofingen. Subject: "International Methods of Determining the Value of Galenic Preparations" (in French).

J. Lang, Davos. Subject: "From the International Bulletin of Origin Obligatory for the Chemical and Biological Products Not Registered in the Pharmacopœias" (in French).

Prof. Wilczek and Prof. Mellet, Lausanne. Subject: "Glycosides Giving Rise to Alcannine" (in French).

We request you, Gentlemen, to kindly publish the date and program of our General Assembly in the Pharmaceutical Journals of your country.

We shall be pleased to be informed of the names of the Delegates taking part in this Assembly, *before July 1st.*

We wish to add that we shall be pleased if a large number of associated members will take part in these meetings and that the members of your Society wishing to attend the Lectures on Scientific Questions will be welcome.

The Delegates, members of the Central Committee only, have a right to vote.

Mr. Chessex, Pharmacist in Lausanne, Avenue de la Gare, has kindly offered to assist the members in making arrangements with Hotels during their sojourn in Lausanne.

Vert truly yours,

(Signed) L. VAN ITALLIE,

THE HAGUE, MAY 30, 1925 J. J. HOFMAN.

TWENTY-NINTH ANNUAL CONFERENCE OF THE ASSOCIATION OF DAIRY FOOD AND DRUG OFFICIALS OF THE UNITED STATES.

The 29th annual conference of the Association of Dairy Food and Drug Officials of the U. S. will be held in Denver July 28 to 31. A. D. Sibbald of St. Paul is President, and W. C. Geagley of Lansing, Mich., is Secretary-Treasurer.

It is the desire of the Association that the trade take a more active interest and part in the affairs of the Association because of the importance of the work conducted by this organization and the many divisions of various industries that are more or less concerned.

The Association is endeavoring to unify food and drug law enforcement, to encourage and foster the food industry, and decide questions, when they arise, upon their merits. A session will be devoted to the present-day enforcement of existing drug laws in the several states with a view of encouraging efforts to improve the quality of drugs wherever this may be necessary.

AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION.

The American Pharmaceutical Manufacturers' Association met at White Sulphur

Springs, W. Va., June 22–25. Among the speakers of the convention were—Dr. George W. Hoover, of the Bureau of Chemistry, who discussed the coöperation of the Bureau with the drug manufacturing interests, and expressed satisfaction because of the cordial relations which existed between them. Dr. Leach, of the Laboratory of the American Medical Association, complimented the Association on the strides made in advancing the manufacturing, industry. Dr. B. R. Rhees, of the Narcotic Division of the Bureau of Internal Revenue, spoke on the operation of the Harrison Act. He said that narcotic addiction was on the decrease. He urged the exemption of codeine from the operation of the law, in view of the fact that there was no evidence of codeine addiction.

The following officers were elected: *President*, J. H. Foy, Newark; *First Vice-President*, F. A. Mallett, Des Moines; *Second Vice-President*, J. L. Dow, Lancaster, N. H.; *Secretary*, Carroll Dunham Smith, New York City; *Treasurer*, C. W. Angst, Indianapolis. *Directors:* D. C. H. Searles, R. R. Patch, Dr. Alfred S. Burdick. Charles Wesley Dunn was reappointed counsel.

PROPRIETARY ASSOCIATION OF AMERICA.

The 43rd annual session of the Proprietary Association of America met in joint session with the Canadian Proprietary Articles Trade Association in Montreal, May 25–26. The sessions were featured by addresses of Sir William S. Glyn-Jones, J. Allen Kennington, Hon. Henry Miles, T. W. Delahanty, assistant chief, Chemical Division U. S. Department of Commerce. The outline of Sir William S. Glyn-Jones' address has been given in connection with reports at other meetings.

The following officers were elected: *President*, Frank A. Blair, New York; *Secretary*, Charles P. Tyrrell, Syracuse. *Members of the Executive Committee:* Z. C. Patten, Jr., Chattanooga; Joseph F. Hindes, Baltimore; V. H. Beardsley, Elkhart, Ind.

OFFICERS OF THE UNITED MEDICINE MANUFACTURERS ASSOCIATION.

The fourth annual meeting of the United Medicine Manufacturers of America was held in Cleveland, June 7–9. The following officers were elected: *President*, I. R. Blackburn, Dayton, Ohio; *Vice-Presidents*, N. S. Wile, Norristown, Pa., Edward G. Binz, Los Angeles, Cal., W. H. Wilson, Atlanta; *Treasurer*, George W. Reese, Cleveland, Ohio; *Secretary*, James F. Pickett, Washington, D. C.; *General Counsel*, Clinton Robb, Washington, D. C.

AMERICAN FAIR TRADE LEAGUE.

Representatives of more than eight hundred leading manufacturers and retail distributors who attended the annual meeting of the American Fair Trade League held recently in New York agreed that the time is ripe for a concerted effort to obtain federal legislation permitting the standardization of resale prices and the protection of producers, distributors and consumers alike from the bad effects of indiscriminate price cutting on trademarked merchandise. Edmond A. Whittier, Secretary-Treasurer of the League, in his annual report, said that the advocates of this reform are uniting in support of a single measure to be introduced when Congress reconvenes in December. He called special attention to the fact that the Chamber of Commerce of the United States had reiterated its intention to support such a legislative program, carrying out the will of its members, already expressed through a national referendum.

OFFICERS OF STATE PHARMACEUTICAL ASSOCIATIONS.

ALABAMA.

Mobile was selected for the next meeting place of Alabama Pharmaceutical Association. The following were elected officers of the ensuing year: *President*, Harold Duncan, Birmingham; *First Vice-President*, Hoyt Greer, Sheffield; *Second Vice-President*, Homer Wright, Auburn; *Secretary*, W. E. Bingham, Tuscaloosa.

ARKANSAS.

The following officers were elected at the 43rd annual meeting of the Arkansas Pharmaceutical Association: *President*, P. R. Turner, of Marianna; *First Vice-President*, Herbert Parker, Jonesboro; *Second Vice-President*, H. H. Heard, Arkadelphia; *Secretary*, Miss Mary A. Fein, Little Rock; *Treasurer*, E. D. Oslin, Little Rock. *Members of the Executive Committee:* Ed Bradley, Hot Springs; W. R. Appleton, Warren. *District Committeemen:* White Jackson, Jonesboro; M. S. Cooper, Walnut Ridge; W. G. Ownbey, Fayetteville; R. B. Thompson, Paris; J. K. Poch, North Little Rock; W. T. Brasher, Pine Bluff, and D. J. Patrick, Camden.

Little Rock was chosen for the 1926 convention.

COLORADO.

The officers elected by Colorado Pharmaceutical Association are: *President*, Karl M. Frey, Pueblo; *First Vice-President*, Justin A. Van Lopik, Castle Rock; *Second Vice-President*, Ferd F. Koch, Colorado Springs; *Treasurer*, Julius F. Earnest, Denver; *Secretary*, Chas. J. Clayton, Denver.

The next meeting will be held at Boulder, the tentative dates being June 15, 16 and 17.

Among the speakers of the convention were: H. S. Noel, Dean H. C. Washburn and Carl Weeks.

GEORGIA.

Georgia Pharmaceutical Association will meet in Macon next year. The following were elected officers for the ensuing year: *President*, A. R. Munn, Atlanta; *First Vice-President*, A. H. Waldron, Atlanta; *Second Vice-President*, Frank E. Johnston, Savannah; *Third Vice-President*, N. S. Arthur, Athens; *Treasurer*, C. V. Hohenston, Savannah. Resolutions of appreciation were accorded T. A. Cheatham of Macon, for his long service as *Secretary* of the Association and to T. C. Marshall for his services as *Treasurer*.

MASSACHUSETTS.

Former Governor and U. S. Senator David J. Walsh spoke to Massachusetts pharmacists on national problems. The Association elected the following officers: *President*, Maurice W. Corbin, Worcester; *First Vice-President*, William H. Townsend, Lynn; *Second Vice-President*, Carl S. A. Harring, Dorchester; *Secretary*, James F. Guerin, Worcester; *Treasurer*, Lyman W. Griffin, Allston.

MISSISSIPPI.

Jackson was selected for the 1926 meeting of Mississippi Pharmaceutical Association, and the following officers were elected: *President*, A. C. Strealy, Vicksburg; *First Vice-President*, L. Q. Lee, Cleveland; *Second Vice-President*, Mat Huber, Ocean Springs; *Secretary-Treasurer*, A. S. Coody, Jackson.

MISSOURI.

Publicity Director E. L. Newcomb addressed the Missouri Pharmaceutical Association on the Headquarters Building. Among other speakers were—Samuel C. Henry of the N. A. R. D., Dr. H. M. Whelpley, Carl Weeks, and John Gamble.

The officers elected for the ensuing year are as follows: *President*, W. A. Ackenhausen, Kansas City; *Vice-President*, Robert Lisch, Springfield; *Second Vice-President*, H. M. Whelpley; *Third Vice-President*, Frank Hutchason; *Treasurer*, William Mittelbach; *Secretary*, W. H. LaMont; *Assistant Secretary*, H. J. Nie.

NEBRASKA.

The following were elected officers of the Nebraska Pharmaceutical Association for the ensuing year: *President*, Fred Witt, Nebraska City; *First Vice-President*, G. Turner Haines, Omaha; *Second Vice-President*, C. P. Hildebrand, York; *Third Vice-President*, R. L. Crawford, Bancroft; *Fourth Vice-President*, J. K. McDowell, Lincoln; *Fifth Vice-President*, J. H. Naden, Franklin. The *Treasurer* and *Secretary* were re-elected, namely, D. D. Adams of Nehawka, and J. G. McBride, University Place.

It was decided to hold the mid-year meeting, and planned to have as many county meetings during the year as possible.

Professor E. L. Newcomb spoke in the interest of the American Pharmacy Headquarters. The Association went on record as opposed to any change in the Prohibition Law whereby intoxicating beverages can be dispensed on prescriptions. Omaha was selected for the 1926 meeting.

NEW JERSEY.

The 56th annual meeting of the New Jersey Pharmaceutical Association will be held in Atlantic City.

The following officers were elected at the 55th annual meeting: *President*, Max Fried, Newark; *First Vice-President*, James L. Smart, Paterson; *Second Vice-President*, Rudolph E. Wilhelm, Jersey City; *Secretary*, Jeannot Hostmann, Hoboken; *Treasurer*, Charles J. McCloskey, Jersey City.

Ex-President Samuel L. Hilton, of the AMERICAN PHARMACEUTICAL ASSOCIATION extended the greetings of the parent body. President Ambrose Hunsberger, of the Pennsylvania Pharmaceutical Association, spoke for the N. A. R. D. Albert H. Brundage, H. O. Ryerson and Ambrose Hunsberger were elected honorary members.

Among the papers read at the meeting were: The Responsibility of Pharmacists in Handling

Insecticides and Fungicides, by A. Freeman Mason of the New Jersey State Agricultural College; Pharmaceutical Education in New Jersey, by Dr. Robert P. Fischelis; Drug Clubs, Their Aims and Purposes, by William Muster; When to Use Tragacanth, by Adolph F. Marquier; Solution of Magnesium Citrate, by R. P. Fischelis and C. E. Fanslau; Pharmacy for 71 Years as I Have Seen It, by George H. White; and Drug Waste, by Dr. Filemon E. Hommell.

NEW YORK.

New York State Pharmaceutical Association elected the following officers: *President*, T. Bruce Furnival, Syracuse; *First Vice-President*, George C. Diekman, New York; *Second Vice-President*, Walter B. Tongue, Poughkeepsie; *Third Vice-President*, Pincus Herz, New York; *Secretary*, E. S. Dawson; *Treasurer*, Frank Richardson, Cambridge. This is the twenty-second term of Secretary Dawson.

The convention was the largest in history of the Association. A resolution was adopted asking for the establishment of government dispensaries and that pharmacists be accorded free use of alcohol for pharmaceutical purposes.

PENNSYLVANIA.

Buena Vista was selected for the next meeting place of the Pennsylvania Pharmaceutical Association. The following officers were elected for the ensuing year: *President*, George F. Lee, Johnstown; *First Vice-President*, William J. Stoneback, Philadelphia; *Second Vice-President*, George A. Valentine, Washington; *Secretary-Treasurer*, Louis Saalbach, Pittsburgh; *Member of Executive Committee*, Ambrose Hunsberger, Philadelphia.

Among the papers read at the meeting were the following: Intelligence Plus, by Louis Emanuel; A Problem in Distribution, by C. Leonard O'Connell; Tannin of Rhus Glabra, by J. C. and Bertha L. DeG. Peacock; Stop that Leak, by W. J. Stoneback; Bacillus Acidophyllus Preparations, by J. C. Peacock; The Biological and Micro-analytical Laboratory of the Philadelphia College of Pharmacy and Science, by Arno Viehoever; A Report on Tincture Iodine, by A. F. Judd; The Making of the *N. F. V*, by E. Fullerton Cook; Advertising to the Physician, by Edgar F. Heffner, Jr.

Addresses were delivered by President-elect L. L. Walton of the A. PH. A., and James F. Finneran of the N. A. R. D. The membership was increased by 468 new members.

TEXAS.

Opposition to handling intoxicating beverages in drug stores was expressed in resolution by Texas Pharmaceutical Association. The following officers were elected: *President*, A. W. Griffith, Austin; *First Vice-President* and next year's *President*, Zeb W. Rike, Farmersville; *Second Vice-President*, J. L. Horn, Fort Worth; *Secretary-Treasurer*, Walter D. Adams; *Home Secretary*, J. W. Graham, Austin; Walter H. Whisenant, retiring president and Sam P. Harben were elected to the *Executive Committee*, the former being re-elected and R. H. Walker of Gonzales was elected to the Board of Trustees.

VIRGINIA PHARMACEUTICAL ASSOCIATION.

Frank T. Stone, of the N. A. R. D., extended the greetings of that organization, and R. G. Pankow spoke interestingly on "Salesmanship." E. G. Eberle in his address stressed the importance of the American Pharmacy Headquarters as the best possible publicity for pharmacy. The next annual meeting will be held in Bedford.

The Association passed resolutions recommending R. A. Fulwiler, Virginia Director, as Zone Administrator for Zone 6, under the organization plan of the Revenue Department. The meeting was well attended and interesting throughout, and the writer takes this opportunity of expressing his appreciation of the cordiality and hospitality received.

The officers for the ensuing year are—*President*, C. L. Guthrie, Petersburg; *Vice-Presidents*, F. W. McIntosh, Farmville; N. G. Miller, Purcelleville; W. E. Locke, Richmond; H. R. Cecil, Dublin; R. W. Barnes, Roanoke; C. R. Claiborne, Lynchburg; *Secretary*, A. L. I. Winne, Richmond; *Treasurer*, Miss Maud Lambert, Roanoke.

President, L. R. Shadwell in his address urged strict enforcement of the prohibition regulations. An interesting report was made by members of the faculty of the School of Pharmacy outlining the methods followed in the teaching of pharmacy.

WASHINGTON STATE.

Washington State Pharmaceutical Association elected the following officers: *President*, C. B. Kinne of Seattle; *Treasurer*, Walter H. Hinman of Seattle; *Secretary*, H. W. Ayers.

District Governors were named as follows: Alex. Sloan of Yakima, Dr. P. H. Dirstine of Pullman, D. E. Garrison of Centralia, Frank Gillette of Hoquiam, Olie Lien of Tacoma. Hoquiam will probably be the next meeting place.

WISCONSIN PHARMACEUTICAL ASSOCIATION.

Wisconsin Pharmaceutical Association made an appropriation of $500 annually to the State Pharmaceutical Research Fund under the auspices of the School of Pharmacy. Among the speakers of the convention were, Samuel C. Henry, H. C. Christensen, Nels Darling, and Secretary Wm. B. Day of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The following were elected officers for the ensuing year: *President*, A. E. Haise, Milwaukee; *Vice-Presidents*, E. J. Burnside, Ripon; P. W. Gullard, Greenwood, and Edwin Boberg, Eau Claire; *Secretary*, O. J. S. Boberg, Eau Claire; *Treasurer*, Henry Rollman, Chilton.

GOLDEN ANNIVERSARY.

The Nova Scotia Pharmaceutical Society will celebrate its semi-centennial anniversary at the meeting in Halifax July 29 to 31. An interesting program has been provided.

THE PHARMACIST AND THE LAW.

"Assistant Secretary of the Treasury, Lincoln C. Andrews, in charge of prohibition enforcement, is about to inaugurate changes of far-reaching consequence in the system employed for prohibition enforcement. His plan has the unqualified support of both the President and Secretary of the Treasury, Mellon and will be put into force as rapidly as possible beginning August 1 next when a revision of Regulations 61, prepared in cooperation with the Alcohol Trades Advisory Committee, will go into force.

"Prohibition Directors and local supervising special agents, who are now in charge of enforcement in the forty-eight States, will be superseded by twenty-four Prohibition Administrators. State lines will be abolished, conforming the twenty-four new districts as nearly as possible to the existing judicial districts except that in certain cases several such districts are embraced within the jurisdiction of a single Administrator. Collectors of Internal Revenue, who heretofore have had primary supervision of the manufacture, distribution and use of denatured alcohol, will hereafter function only with respect to tax matters, all their other duties being discharged by the Prohibition Administrators."

In each district a prohibition administrator will be appointed, selected for personal fitness and executive and business ability. He will be given full authority and held responsible for the enforcement of the law and for all personnel within his district. His official staff will include a first assistant directly in charge of work on permits and a second assistant in charge of enforcement work, a chemist, and a counsel who will work in close coöperation with United States attorneys. Agents under the first assistant will be trained pharmacists and chemists; and under the second assistant, trained criminal investigators and detectives.

The plan is a decentralization with view to economy and efficiency, permitting the use of a smaller personnel with higher qualifications. Its disregard of State lines makes it more clearly a Federal organization, not unlike that of the customs service. The headquarters in Washington will be largely one for supervision to secure uniformity of policy, standardization, coördination, etc. Its functions will be conducted under the same officers as at present, but their duties will be less administrative and more supervisory. Opportunity will be given for these officers to spend a considerable portion of their time in the field outside of Washington.

The following schedule shows the districts into which the country has been divided, the headquarters of each Prohibition Administrator and the territory subject to his jurisdiction:

No. 1—Boston: Maine, New Hampshire, Vermont, Massachusetts and Rhode Island.

No. 2—New York: Southern and eastern districts of New York and Connecticut.

No. 3—Buffalo: Western and northern districts of New York.

No. 4—Pittsburgh: Western and middle districts of Pennsylvania.

No. 5—Philadelphia: Eastern district of Pennsylvania and New Jersey.

No. 6—Baltimore: Maryland, District of Columbia, Virginia and Delaware.

No. 7—Atlanta: Georgia and North and South Carolina.

No. 8—Tampa: Florida.

No. 9—New Orleans: Louisiana, Mississippi, Alabama and Arkansas.

No. 10—Louisville: Kentucky and Tennessee.

No. 11—Columbus: Ohio and West Virginia.

No. 12—Detroit: Michigan and Indiana.

No. 13—St. Louis: Missouri and eastern and southern districts of Illinois.

No. 14—Chicago: Northern district of Illinois and Wisconsin.

No. 15—Minneapolis: Minnesota and North and South Dakota.

No. 16—Omaha: Nebraska, Iowa and Kansas.

No. 17—Fort Worth: Texas and Oklahoma.

No. 18—Denver: Colorado, Utah and New Mexico.

No. 19—Helena: Montana, Indiana and Wyoming.

No. 20—Seattle: Washington, Oregon and Alaska.

No. 21—San Francisco: Northern district of California and Nevada.

No. 22—Los Angeles: Southern district of California and Arizona.

No. 23—Honolulu: Hawaii.

No. 24—San Juan: Porto Rico.

"While each Prohibition Administrator will be assigned a chemist the work performed by these technical assistants will correspond largely to that which is now done in the branch laboratories of the Prohibition Bureau. The Division of Industrial Alcohol and Chemistry, of which Dr. J. M. Doran is the head, will continue to supervise all technical matters including the fixing of standards, the examination of samples, the determination of potability, etc., and an important function of this division will be the careful harmonizing of the practices of Prohibition Administrators with respect to the treatment of all permit holders."

ROY A. HAYNES WILL RESIGN?

It is reported in the daily press that Federal Prohibition Commissioner Roy A. Haynes will resign. The Commissioner who has served for four years, is known to have desired to resign several times. President Coolidge, it is said, prevailed upon him to keep out of the Ohio gubernatorial fight last November, when he was prepared to run as the dry candidate.

Other reports say the Commissioner will not resign and will function as a "Chief of Staff" to General Andrews.

COCA IMPORT ALLOTMENT TO BE CUT NEXT YEAR.

As a result of a conference of the Experts' Committee of the Federal Narcotic Control Board with American manufacturers of cocaine, the allotments of coca leaves that may be imported during the year beginning July 1 have been reduced, compared with this year.

The reason for this is found in the fact that sales of cocaine have declined very largely. L. C. Nutt, chairman of the board, says that sales in the last fiscal year were about 50 per cent less than in 1923, when they aggregated 57,123 ounces, compared with 37,051 ounces during the fiscal year 1924. The allotments of coca leaves that may be imported have not been stated, but in 1923 importations were 286,000 pounds.

VERBATIM REPORTS OF LECTURES.

According to the Paris correspondent of the *Chemist and Druggist*, a curious copyright case came before the Paris Courts recently, in which six professors of the Paris Faculty of Pharmacy, MM. Bougault, Coutière, Grimbert, Guignard, Lebeau, and Perrot prosecuted a publisher for selling *verbatim* reports of their lectures. The French law of copyright covers oral University lectures, and a conviction was secured, although the penalties, a 50 fr. fine and 100 fr. damages to each professor, were not particularly heavy.

PAN-AMERICAN STANDARDIZATION RESOLUTIONS.

One of the eight resolutions passed at the recent Pan-American Standardization conference at Lima, Peru reads: "That the weights and measures used in the various countries tend toward the metric system, and that the new specifications, and any modifications which may be made in those now in existence, be expressed in C. G. S. (centimeter-gram-second) units. That in catalogs and industrial and technical literature where weights and measures of other systems are used these should be accompanied, so far as possible, by their equivalents in the decimal metric system."

Ounces and pounds mean little to the inhabitants of the fifty-five countries which have legally adopted the metric system. The only

two countries in the civilized world which are not metric are the British Empire and the United States; yet even British and American measures are not the same. For instance, our quart is 20 per cent smaller than the British quart. For that reason, in exporting to Canada special markings of goods is sometimes necessary, since Canada refuses to allow the importation of goods in containers marked in pints or quarts or gallons. Such liquid exports to Canada must be labeled according to weight.

BOOK NOTICES AND REVIEWS.

The Effects of Ions in Colloidal Systems. By Dr. Leonor Michaelis, University of Berlin; at present Professor of Biochemistry at the Aichi Medical University in Nagoya, Japan. Published by Williams and Wilkins Company, Baltimore, Md., 1925. Price $2.50.

In this short monograph Michaelis discusses the parts played by ions in the various phenomena exhibited by colloidal systems. He explains the various modes of formation of the double layer: appositional adsorption, dissociation of the colloid, and a group in which neither of these causes accounts for the charge. In this last group comes charcoal, to which a chapter is devoted. The Donnan equilibrium is also taken up as a means of explaining the formation of a surface potential. This is followed by a discussion of the discharge of the particles in adsorption and flocculation. The last two chapters are devoted to the effects of electrolytes on the swelling of agar and konyaku, and a brief description of some "antagonism" phenomena in mixtures of electrolytes.

In this not too comprehensive discussion of some of the more important effects of ions on the behavior of colloidal systems, the author has pointed out the necessity of a study of these phenomena as a means of interpreting biological changes in terms of the laws of chemistry and physics. The work is up-to-date and of special interest to biologists.

F. P. NABENHAUER.

Parry's Cyclopedia of Perfumery. A Handbook on the raw materials used by the Perfumer, their origin, properties, characters and analysis; and on other subjects of theoretical and scientific interest to the User of Perfume Materials, and to those who have to examine and value such materials. By Ernest J. Parry, B.Sc., F.I.C., F.C.S. Two Volumes. Price, $10.00. Philadelphia: P. Blakiston's Son & Co. 1925.

The author states that the need for a scientific work of reference devoted to perfumery and its raw materials has long been felt. He has very successfully supplied the want; formulas for finished perfumes are not dealt with—the reasons assigned are that really good formulas are rarely published and the best of these are merely an index to the perfumer.

As far as the subject matter is concerned the author has given comprehensive information; for example, about thirty pages deal with oil of lavender. About the same number of pages are devoted to "Perfume in the Plant." Under this head the author speaks of the genesis and functions of perfumes in plants, admitting, of course, that this branch of physiological botany is still but little understood. A paragraph of this discussion will be of interest.

"Whilst it may be true that the essential oils which constitute the perfume material of plants are, so to speak, by-products of the metabolic processes of cell life, and as such to be classed with alkaloids, tannins, and coloring matters, it is impossible to overlook the enormous importance of the perfume in the plant economy in attracting insects for the purpose of fertilizing the flower. It is, of course, true that some flowers are odorless whilst the green leaves are highly odorous—as in the geranium; and also that the essential oil is frequently to be found in almost all parts of the plant, including the root. But in the former case the insect will be attracted by the perfume of the leaf, and so brought within range of the colored flower which he will then visit; and in the latter case, it may frequently be that the oil is being manufactured by steps in the plant, and its presence in parts of the plant remote from the flower merely indicates one of the steps of its evolution, since the oils from different parts of the same plant are usually different in character."

The materials are treated in alphabetical order in about 900 pages; as indicated, some of the subjects are discussed at length, others are dismissed with a few lines only, according

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to their importance in the perfume industry. The work displaces other books, because great progress has been made in the industry; it will, accordingly, be welcomed by manufacturers of perfumes, dealers in such materials and scientists, and as a reference book in libraries of manufacturers, universities and technical institutions. E. G. E.

Vorschriften-Buch für Apotheker, Drogisten, Chemische Fabriken und Verwandte Gewerbebetriebe. Von Karl F. Töllner. 2. Auflage. Octavo 158 pp. $1.11. Leipzig, Dr. Max Janecke, Verlagsbuchhandlung.

Many are the books on pharmaceutical and technical formulas, but few, very few, contain reliable and practical receipts. For this very reason the A. PH. A. Receipe Book was created! The book before us was written by a practical manufacturing pharmacist and chemist, Karl F. Töllner in Bremen. It is from the practice for the practice! What a large variety of formulas are included can be seen from the following few titles: Aluminum Solder, Aqua Cerasorum, Arnica Jelly, Balsanum Sulphuris, Blue Ink, Champagne Essence, Dutch Drops, Eau de Gotat, Electurarium Phosphoratum, Erasmus Wilson's Hairwash, Extraits Triples, Fluoroform, Fruit Wines, Glycerin and Cucumber Jelly, Hematogen, Hufland's Snuff, Ichthyol Dusting Powder, Kefir, Lacca Bibliopegorium, Listerine, Macassar Oil, Mel Foeniculi, Oleum Hyperici, Pasta Depilatoria, Powdere de Riz, Pulvis Equorum, Roob Juniperi, Sachets, Syrupus Coffeae, Tinctura Indica, Toiler Vinegar, Ung. Sabadillae, Vaselinum Camphoratum, Vienna Tooth Powder, Ylang Ylang Extract and Zapon Varnish.

What a variety of subjects and formulas! The present, second edition, has been thoroughly revised and brought up-to-date. The author asks for constructive criticism from all users of his work.

Formulary of the Peking Union Medical College. Second Edition. P. U. M. C. Press, 1924.

With the compliments of John Cameron, Pharmacist, P. U. M. C., this formula book, comes to us from the antipodes. It contains chiefly a list of drugs and preparations selected as official for use in their hospital. It has been published with the objects in mind, first, to promote the teaching of rational drug therapy within the institution, and second, to secure the greatest degree of economy compatible with the welfare of the patients in the hospital.

It is quite a satisfaction to note that a great many U. S. P. and N. F. drugs and preparations are included together with our Latin titles and even abbreviations. The metric system is used throughout the Formulary.

Unsere Heilpflanzen, ihre Geschichte und ihre Stellung in der Volkskunde. Ethnobotanische Streifzuege. Von Dr. Heinrich Marzell. Mit 38 Abbildungen. Octavo, 240 pp. Gold-Mk 5. Verlag von Theodor Fisher, Freiburg in Breisgau.

The well-known Bavarian author, whose larger work "Illustriertes Kräuterbuch" (Illustrated Herb Book) is a recognized standard on this subject, herewith presents another text on Medicinal Plants, their History and Folklore.

How thorough and deep the author dived into this interesting subject can be seen from the quoted literature which occupies four closely printed pages and includes such old reliable works as, Albertus Magnus: De Vegetabilibus; Otho Brunfels: Contrafayt Kreuterbuch; Dioscorides: De Materia Medica; Ernst Meyer: Geschichte der Botanik; Plinius Sicundus: Naturalis Historiae; Theophrastus; Historia Plantarum; A. Tschirch: Handbuch der Pharmakognosie; H. Zornig: Arzneidrogen.

The monograph on Aspidium occupies 9 pages and its origin and history is traced back to the "Pteris of Dioscordes." The one on Hyoscyamus comprises 6 pages and contains a mine of historical notes, tracing the plant back to Babylonia, India and China. The subject of *folklore* is highly interesting and was carefully compiled from references throughout the world. The book is adorned with 38 illustrations which are reproductions of drawings of plants by such old, reliable botanists as Fuchs, Tragus, Brunfels, etc.

This is a highly interesting book! Pharmacists and students who wish to become better acquainted with the history of drugs, a valuable asset to their education, as well as their commercial life, will do well to consult the work, quite especially as its statements are authentic.

OTTO RAUBENHEIMER, PH.M.

Adulteration of Drugs. A reprint of an article in *Archiv der Pharmazie und Berichte der Deutschen Pharmazeutischen Gesselschaft.* By Prof. Dr. H. Zörnig. Nearly 100 drugs are reported on. Not only does the author present his investigations but cites a valuable list of references. The author's usual careful investigation is evident throughout.